



**hoses & fittings  
for  
industry**

**2017**



# GENERAL TERMS AND CONDITIONS

## General terms and conditions

### DEFINITIONS

**Seller:** TUBES INTERNATIONAL® Sp. z o.o. with its registered office in Poznań at ul. Bystra 15a, 61-366 Poznań, entered into the register of entrepreneurs of the National Court Register (KRS) kept by the District Court in Poznań, VIII Commercial Division under KRS number: 0000124055, NIP number: 781-00-46-084, share capital: 275.000 PLN.

**Buyer:** shall mean the entity, with whom the Seller made the contract (verbal or written contract).

**Order:** shall mean the order placed by the Buyer for the Goods or Service.

**Goods:** shall mean the subject of the contract between the Buyer and the Seller.

These General Terms and Conditions form the standard conditions of sale of Goods and Services by the Seller. They shall govern unless otherwise expressly agreed by the parties in writing. The General Terms and Conditions are available on the website [www.tubes-international.com](http://www.tubes-international.com) and in all retail stores of the Seller. These General Terms and Conditions apply to all sales or supply contracts made between the Seller and the Buyer and shall prevail over any General Terms and Conditions of Sales of the Buyer, unless the parties specifically agree otherwise in writing.

### GENERAL PROVISIONS

Catalogues, brochures, price lists and other publications about the Goods offered by the Seller are issued only by means of indication and shall not be treated as trade offers as stated by the Civil Code. Product samples and product models shall be treated as demonstrative and display materials. All technical documents contained in the catalogues, price lists and other advertising materials, intended for informational purposes, do not ensure quality and are not binding, unless included in the contract. The Seller owns copyright to all documents. The Buyer must provide all information relevant for correct order processing, and in particular: technical parameters of the ordered Goods, the assortment of the Goods, the quantity of the ordered Goods, the precise name and address of both the Buyer and the delivery location. Accepting these Terms and Conditions one time, means accepting them for all subsequent orders as long as the Buyer maintains regular trade relations with the Seller.

### SALES CHANNEL

There are several ways to purchase the Goods and Services:

- personal selling, carried out in retail stores of the Seller.
- mail order, the Goods are delivered by forwarders.
- online sales via e-shop: [sklep.tubes-international.pl](http://sklep.tubes-international.pl).

### PLACING AN ORDER

Orders can be placed in the following ways:

- verbally, with a signature as a confirmation or in a written form, both during direct personal selling,
- as mail order: in a written form, by fax or email.
- via e-shop: [sklep.tubes-international.pl](http://sklep.tubes-international.pl).

Please, use the code numbers and names of the Products ordered according to our latest catalogue.

If the order concerns an offer made earlier, the number of that offer must be included in the order. Following the above mentioned requirements allows for precise and fast order processing.

The Buyer is always responsible for giving the correct data both in the order or in any documents enclosed to the order. Each time

an order is accepted by the Seller, it is confirmed in writing or by email within 7 days from the date of its submission, unless agreed differently. Unless otherwise agreed in writing by both parties, the order shall never be considered as accepted for processing in the absence of confirmation.

Order processing time starts either when the order confirmation is sent or according to the agreements of the contract, but not earlier than all necessary documents are delivered by the Buyer and before the agreed prepayment is submitted.

A delivery date is considered to be reached if the Goods leave the warehouse by the agreed time or the Buyer is acknowledged that the Goods are ready for shipment. The date of delivery of the Goods can be postponed by reason of force majeure. The force majeure is defined as any event that cannot be foreseen at the date of signing the Contract or avoided and is beyond the reasonable control of the Seller. The Seller acknowledges the Buyer immediately if any of the above happens and informs on the expected delivery date.

### DELIVERY OF GOODS

The Seller is obliged to deliver the Goods that meet the conditions outlined in the confirmation of an order i.e. delivery date, quantity, type of Goods and price. Any changes made in the delivery conditions require written approval. The moment the Goods are passed to the Buyer from the Seller's store or are taken over by forwarders, all benefits and burdens connected with the products including the risk of accidental loss or damage to the Goods are transferred to the Buyer. Delivery charges are not included in the prices of the Goods. The Goods are delivered by the forwarders at the expense of the Buyer to the address indicated in the order. The Goods delivered by the Seller remain the property of the Seller until the payment is made. The Seller reserves the right to choose the forwarder and to refuse to accept any Goods that are sent back by the Buyer without prior notice. The Seller shall not be held responsible for any delays in delivery due to force majeure. If the Buyer fails to collect the Goods within the specified period, the Seller may store the Goods at the expense and risk of the Buyer, and then, after 7 calendar days, may sell the Goods on the account of the Buyer or to withdraw from the Contract with immediate effect and charge the Buyer any costs incurred by the Seller, arising from such failure.

### TERMS OF PAYMENT

Payment for the Goods shall be made:

- by cash or cheque (in the case of a mail order - payment is collected by forwarders),
- by bank transfer within 7 days from the date of an invoice,
- by bank transfer within 14 days from the date of an invoice.

Any other conditions of payment are agreed upon individually with the Sales Department Manager.

The bank transfer option is available for the Buyers who have already bought products from the Seller and provided the following documents:

- valid extract from the National Court Register (KRS) or Business Activity Register
- copy of NIP number or REGON statistical number certificate,
- filled money transfer request form (available in the network of our retail stores and at [www.tubes-international.com](http://www.tubes-international.com)).

If the Buyer does not pay within the timeframe or exceeds credit limit, execution of orders paid with money transfer will be suspended until all overdue payments are made by the Buyer.

In the event of overdue payments, the Seller is entitled to:

- request statutory late payment interest,
- withdraw from the contract and demand the return of Goods,



# GENERAL TERMS AND CONDITIONS

## General terms and conditions - continuation

- suspend the execution of already accepted orders,
- suspend the bank transfer payment option and withdraw granted discounts,
- suspend all allowances the Buyer is entitled to having the customer credit.

### PRODUCT QUALITY AND WARRANTY

The Seller ensures to the Buyer the technical parameters of the offered Goods. These technical parameters are determined on the basis of the information outlined in the sales correspondence, which includes the technical conditions of the contract (enquiry, offer, order, order confirmation). The Buyer is fully responsible for providing accurate and complete information regarding all technical parameters (working conditions) of the ordered Goods. Relevant approvals, certificates, declarations of conformity or other documents required by law that confirm product quality are provided with the Goods if such a requirement was stated in the order. Supplying these documents may be subject to additional charges. The company will not accept liability in the event of product failure caused by mechanical damage, abuse of the Goods or when incorrect technical parameters were provided by the Buyer. The Seller shall not be liable for any defects of the Goods resulting from causes not lying in the Goods themselves. In particular, the Seller shall not be liable for any accidental damage or its result, damage due to incorrect handling or storage of the Goods by the Buyer or design and manufacturing defects caused a third party. The warranty shall not apply to, when the Goods are altered or not used according to the intended use either by the Buyer or the third party. In the case of justified warranty or guarantee claims, the Seller shall be liable to compensate for damage, however, will not accept liability to compensate lost profits, production loss or indirect damage. The Seller's liability is limited by the terms of the Seller's Civil Liability Insurance policy. The amount of the claim brought by the Buyer is limited to the market value of the Goods or their faulty part. In the case of machines and equipment sold by the Seller, the warranty is granted according to the conditions in the Warranty Card.

### COMPLAINT PROCESS

Lodging a complaint does not entitle the Buyer to suspend payment for the purchased Goods or for their part. The Seller has a right to postpone the performance of provisions of the claim until all overdue payments are settled by the Buyer. The ground to start a complaint process is an immediate written complaint submitted to the Seller. The complaint must include a detailed specification of a defect along with all documents justifying the complaint. The Buyer, as a legal entity, should make the complaint within 14 days after the defect is discovered. The Seller shall be notified about all shipment shortages immediately after the receipt of the Goods by the Buyer but not later than within 3 days of the receipt of the Goods, unless otherwise agreed in writing by both parties.

A response to the complaint shall be provided within 14 days of receipt by the Seller. If performing tests, examinations or repair of the Goods at the manufacturer's is required, the complaint is to be resolved at longer time, agreed by both sides. If the complaint is justified, the Seller shall acknowledge the Buyer in writing or by email about the way the complaint is to be resolved. The Buyer shall be informed about the outcome of the complaint by mail, fax or verbally by an authorized employee or in any other way agreed by the parties. If the complaint is recognized as justified and the replacement of defective Goods is agreed upon, the Goods which are the subject of the complaint should be returned to the Seller. If the complaint is resolved in any other way, the Seller shall remove

the defects from the Goods complained about. The Buyer is not allowed to remove defects on one's own or have a third party repair it at the expense of the Seller. The aggregate amount of stipulated penalties imposed on the Seller shall not exceed an amount of 20% of net worth of the given product.

### FINAL PROVISIONS

An assignment of rights resulting from the contract made with the Seller to a third party without a written consent of the Seller is not permitted. The Buyer is not permitted to make any reduction in the payment without written consent of the Seller. By accepting the contract, the Buyer gives consent to the processing of personal data necessary for order processing or for marketing purposes connected to the Seller's operations. For issues not settled here-under, the provisions of the Civil Code apply. The Seller shall aim to settle all disputes arising in connection with the execution of contracts covered by the above terms and conditions out of court. If the dispute cannot be settled out of court, it shall be resolved by the competent court of the city of Poznań.

President of the Board



# GENERAL TERMS AND CONDITIONS

## How to choose the appropriate hose?

Flexible hoses are widely used in all branches of the industry. Appropriate selection means choosing a product suitable for technical specification of certain application along with assurance of safe and faultless performance. For these reasons, we advise to choose the appropriate hose with the help of Sales or Technical Department of TUBES INTERNATIONAL®.

The appropriate hose selection is possible only when we have full information about working conditions of the hose. The customer should provide such information in a written form.

Essential information for the appropriate hose selection:

- medium (substance conveyed),
- inside diameter,
- maximum working pressure,
- temperature (inside and outside of the hose),
- all other features that may affect hose performance and life such as: vibrations, deformations during work, exposure for external damage, etc.,
- type of hose ends (type of fitting, thread size, type of sealing),
- way of assembling the hose fittings (clip, band, clamp),
- length of the hose (in case of a hose assembly the complete length of hose along with fittings).

Rules mentioned above also concern appropriate selection of different products such as couplings, valves, fittings, etc.

Information and all technical specifications given in the catalogue were gathered with all possible care. However there is a risk of mistakes. It was not possible to include all information on every product in our offer so please contact our specialists from Sales and Technical Departments for further details.

We reserve the right to change all data given in the catalogue.

## Pressure Equipment Directive 97/23/WE

After the accession of Poland into the European Union, an obligation was imposed on pressure equipment producers to conform to Community legislation concerning safety and protection of health. The unification of national legislation of each of the Member States in this respect is the only means of ensuring the free circulation of goods in the internal market. The Pressure Equipment Directive 97/23/WE (PED) of 29 May 1997 is the most important act laying down requirements for the free movement of the pressure equipment including flexible hose assemblies. The Directive lays the rules for classifying the equipment into certain categories, the use of the CE conformity marking, the conditions and procedures for conformity assessment. As far as Poland is concerned, it is Minister of Economy provision of 21 December 2005 on basic requirements for pressure equipment and assemblies composed of several pieces of pressure equipment that implements the resolutions of Directive 97/23/WE.

Regulations make a clear division between pressure equipment which demands affixing CE marking and pressure equipment which does not require to be affixed with this marking, however in order to ensure its safe usage it have to be designed and manufactured according to the guidelines of sound engineering practice. The equipment that requires to be CE marked was divided into four categories (I, II, III, IV) taking into account increasing level of danger caused by pressure, state of aggregation and the group of fluid (group 1 - dangerous fluids, group 2 - all other fluids). There are detailed rules for defining pressure equipment categories and sound engineering practice outlined in the regulations. Depending on the category, certain conformity assessment procedures apply which may demand participation of an independent unit, called a notified body.

The manufacturer of complete pressure hose assemblies is fully responsible for assuring that the equipment satisfies the requirements of this Directive. It includes proper classification and affixing the CE marking. In order to define the category of pressure equipment and to draw up a written (EU) declaration of conformity, when selecting a complete hose assembly, a customer is obliged to give necessary information on the application of the assembly. These essential details are as follows: nominal diameter (DN), maximum working pressure, concentration and group of fluids - specified type of hazard (very toxic, toxic, health hazardous, caustic, irritant, explosive, oxidizing, highly flammable, flammable, harmful for the environment).

TUBES INTERNATIONAL® offers pressure hose assemblies classified into I and II category. They are affixed with the CE marking and supplied with a written (EU) declaration of conformity. Flexible hose assemblies below the limits given in the regulations are designed and manufactured in accordance with the sound engineering practice.





## ENQUIRY - INFORMATION CARD

Attachment A  
for P-4-04

company name:

NIP:

post  
code:

city:

street:

tel:

fax:

e-mail:

contact person:

### Technical requirements regarding the hose (hose assembly)

inside diameter:

working pressure:

bar

inside temperature:

°C

ambient temperature:

°C

medium: (type of substance transferred within the hose)

type:

- ☐ liquid
- ☐ gas
- ☐ steam
- ☐ food products
- ☐ solid

classification to 97/23/WE (mark X):

- ☐ dangerous - explosive (E)
- ☐ dangerous - extremely flammable (F+)
- ☐ dangerous - highly flammable (F)
- ☐ dangerous - flammable (wt higher than ignition temperature)
- ☐ dangerous - very toxic (T+)
- ☐ dangerous - toxic (T)
- ☐ dangerous - oxidizing (O)
- ☐ other

concentration:

%

additional information:  
(detailed description)

possible external damage to  
the hose, external conditions:

installation: dynamic / static:  
(bending during work or lack of it)

additional requirements:

required quality documents:

third party inspections:

☐ TDT ☐ WDT ☐ UDT ☐ DNV ☐ GL ☐ other

end of fitting No. 1: (type, size, material)

end of fitting No. 2: (type, size, material)

number of assemblies  
/ complete length (mm):

expected delivery time:

space for a drawing of a hose assembly, installation or additional remarks:

product used so far:

prepared by:

date, signature:

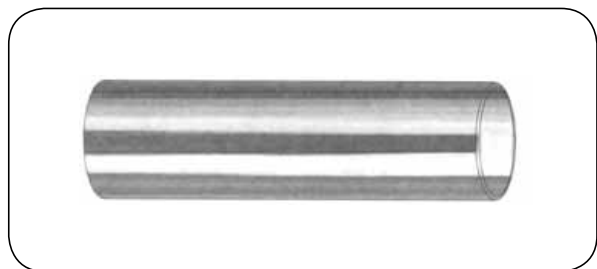
# INDUSTRIAL HOSES - general purpose

## Characteristics

General purpose hoses as the name suggests are widely used for: air, water, non-aggressive chemicals, oil and fuel. Some of them are also used for food products. Made of such materials as: PVC, PU, rubber with a spiral, braid reinforcement (for pressure resistance). If PVC hose is chosen for a particular application the drop of pressure in higher temperatures must be taken into consideration!

Fittings for general purpose hoses (see chapter "INDUSTRIAL FITTINGS - fittings, connectors", connectors) must be assembled with the use of ferrules (crimped with the use of crimping machines) clamps and worm drive hose clamps.

For different applications of hoses, see other chapters of "INDUSTRIAL HOSES".

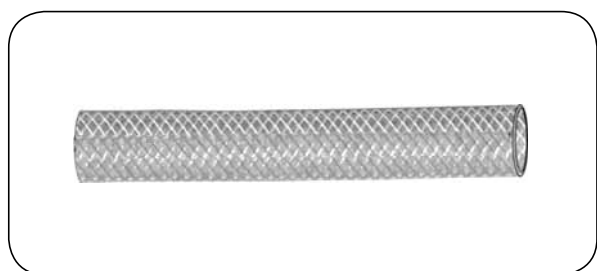


### CPU

**Material:** Soft, transparent polyurethane  
**Working temp.:** From -30°C up to +70°C  
(with peaks up to +100°C)

General purpose, highly flexible hose used for water, air, oils, greases, petroleum products, chemicals, granulates and food substances (according to FDA 21 CFR 175.105 requirements). Designed for no pressure or low pressure applications as well as used for protection.

code	I.D. [mm]	O.D. [mm]	bending radius [mm]	standard length [m]
CX-CPU-03	3	6	36	30
CX-CPU-05	5	8	48	30
CX-CPU-06	6	9	63	30
CX-CPU-08	8	11	66	30
CX-CPU-10	10	16	96	30
CX-CPU-13	13	19	114	30



### RPU

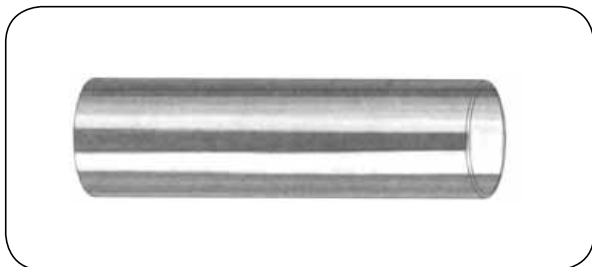
**Internal layer:** Transparent polyurethane  
**Reinforcement:** Polyester-nylon braid  
**External layer:** Transparent polyurethane  
**Working temp.:** From -30°C up to +70°C  
(with peaks up to +100°C)

General purpose, highly flexible hose used for water, air, oils, greases, petroleum products, chemicals, granulates and food products (according to FDA 21 CFR 175.105 requirements).

code	I.D. [mm]	O.D. [mm]	working pressure 20°C [bar]	bursting pressure 20°C [bar]	weight [kg/m]	standard length [m]
CX-RPU-06	6.3	11.5	19	60	0.10	30
CX-RPU-10	10	16	16	53	0.14	30
CX-RPU-13	12.5	18.5	14	35	0.18	30
CX-RPU-16	16	23	11	38	0.24	30
CX-RPU-19	19	26	9	35	0.28	30
CX-RPU-25	25	33	7	28	0.41	30



## INDUSTRIAL HOSES - general purpose

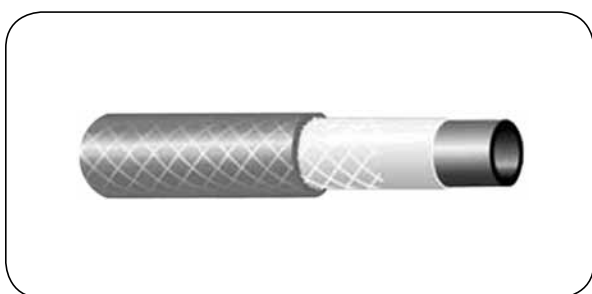


### CRISTALLO EXTRA

**Material:** Transparent PVC  
**Working temp.:** From -20°C up to +60°C

General purpose, flexible hose without reinforcement, designed to transfer water, beer, wine, alcohol up to 28%, fruit juices, beverages and slightly aggressive chemicals. Not recommended for foodstuffs containing fat, oil nor for dairy products. Meets the requirements of the EU Regulations 1935/2004 and 10/2011 (simulants A, B and C) and KTW "C" for potable water. Also used as a protective cover for pipes, hose assemblies, etc.

code	I.D. [mm]	O.D. [mm]	bending radius [mm]	standard length [m]
FT-CRISTALLO-EX-03X05	3	5	15	100
FT-CRISTALLO-EX-04X06	4	6	19	100
FT-CRISTALLO-EX-05X07	5	7	23	100
FT-CRISTALLO-EX-06X08	6	8	27	100
FT-CRISTALLO-EX-07X10	7	10	49	100
FT-CRISTALLO-EX-08X10	8	10	35	100
FT-CRISTALLO-EX-09X13	9	13	84	100
FT-CRISTALLO-EX-10X13	10	13	66	50
FT-CRISTALLO-EX-12X16	12	16	107	50
FT-CRISTALLO-EX-13X17	13	17	112	50
FT-CRISTALLO-EX-14X18	14	18	123	50
FT-CRISTALLO-EX-15X19	15	19	130	50
FT-CRISTALLO-EX-16X20	16	20	138	50
FT-CRISTALLO-EX-18X23	18	23	196	50
FT-CRISTALLO-EX-19X24	19	24	206	50
FT-CRISTALLO-EX-20X25	20	25	212	50
FT-CRISTALLO-EX-25X31	25	31	318	50
FT-CRISTALLO-EX-30X38	30	38	514	25



### RP

**Internal layer:** Transparent PVC  
**Reinforcement:** Polyester braid  
**External layer:** Blue or red PVC  
**Working temp.:** From -20°C up to +55°C

General purpose, flexible, delivery hose. Widely used for water, compressed air, semi-aggressive chemicals, fluid and semi-fluid food substances. Safety factor 3:1.

code (red)	code (blue)	I.D. [mm]	O.D. [mm]	working press. 20°C [bar]	bursting press. 20°C [bar]	weight [kg/m]	standard length [m]
CX-RP-06R	CX-RP-06BL	6.3	11.5	20	61	0.09	30
CX-RP-08R	CX-RP-08BL	8	13.5	19	59	0.12	30
CX-RP-10R	CX-RP-10BL	10	16	16	48	0.15	30
CX-RP-13R	CX-RP-13BL	12.5	18.5	15	45	0.18	30
CX-RP-19R	CX-RP-19BL	19	26	13	39	0.31	30

## INDUSTRIAL HOSES - general purpose



### RAGNO CR

**Internal layer:** Transparent PVC  
**Reinforcement:** Polyester braid  
**External layer:** Transparent PVC  
**Working temp.:** From -5°C up to +60°C

General purpose, flexible, delivery hose. It is widely used for compressed air, slightly aggressive chemicals, fluid and semi-fluid food substances such as water, beer, wine, juices, beverages, alcohols up to 28% concentration. Not recommended for food substances containing oil and fat as well as dairy products. In compliance with European Directive 1935/2004 CE, UE 10/2011 (stimulant A, B and C). Safety factor 3:1.

code	I.D. [mm]	O.D. [mm]	working pressure 20°C [bar]	working pressure 40°C [bar]	working pressure 60°C [bar]	standard length [m]
ME-RAGNO-CR-04	4	10	20	16	12	100
ME-RAGNO-CR-05	5	11	20	16	12	100
ME-RAGNO-CR-06	6	11	20	16	12	100
ME-RAGNO-CR-08	8	13	18	13	9	100
ME-RAGNO-CR-10	10	15	18	13	9	100
ME-RAGNO-CR-12	12	18	12	9	6	50
ME-RAGNO-CR-13	13	19	12	9	6	50
ME-RAGNO-CR-16	16	22	10	7	4	50
ME-RAGNO-CR-19	19	25	10	7	4	50
ME-RAGNO-CR-25	25	32	8	5	3	50
ME-RAGNO-CR-32	32	42	8	4	2	50
ME-RAGNO-CR-38	38	48	8	4	2	50
ME-RAGNO-CR-50	50	62	8	4	2	25



### NOBELAIR PU

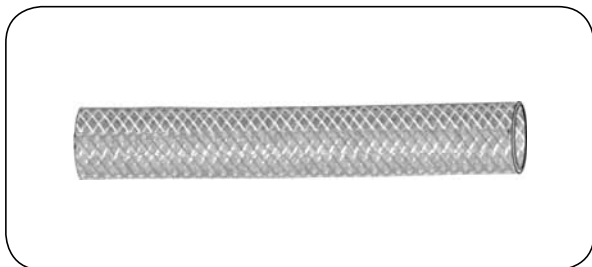
**Internal layer:** Transparent PU  
**Reinforcement:** Polyester braid  
**External layer:** Blue PU  
**Working temp.:** From -40°C up to +80°C

Very lightweight hose with small bending radius. Resistant to kinking. External layer resistant to ozone, oils and fats, slightly aggressive chemicals. Used for pneumatic tools, spray guns, for painting, sand blasting, etc. Suitable for hose reels.

code	I.D. [mm]	O.D. [mm]	working pressure 20°C [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TR-NOBELAIR-PU-06	6	10	20	50	0.056	50
TR-NOBELAIR-PU-08	8	12	20	70	0.070	50
TR-NOBELAIR-PU-10	10	14.5	20	80	0.096	50



## INDUSTRIAL HOSES - general purpose

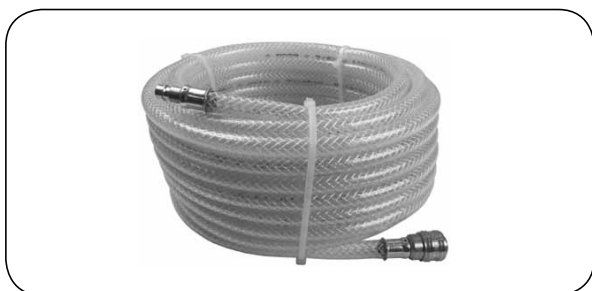


### WTZ

**Internal layer:** Transparent PVC  
**Reinforcement:** Polyester braid  
**External layer:** Transparent PVC  
**Working temp.:** From -5°C up to +50°C

General purpose, flexible hose. Widely used for household applications, in agriculture, gardening, and industry.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	standard length [m]
PR-WTZ-08	8	12.5	15	60	60
PR-WTZ-10	10	14.5	10	40	60
PR-WTZ-12	12.5	17	12	48	60



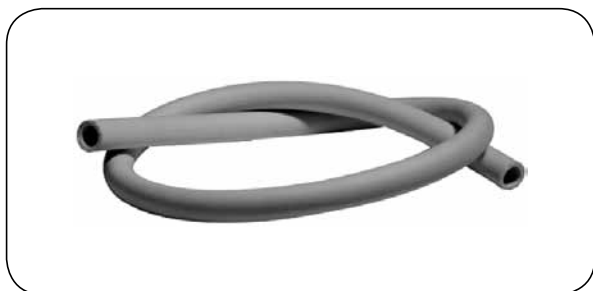
### WTZ / P

**Internal layer:** Transparent PVC  
**Reinforcement:** Polyester braid  
**External layer:** Transparent PVC  
**Working temp.:** From -5°C up to +50°C

General purpose, flexible hose. Widely used for household applications, in agriculture, gardening, and industry. Available as a complete hose assembly (DN10) with the length of 10 or 15 meters with pneumatic plug (DN7.2) on one end and pneumatic socket (DN7.2) on the other end.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	standard length [m]
PR-WTZ-P-10-10	10	14.5	10	40	10
PR-WTZ-P-10-15	10	14.5	10	40	15

## INDUSTRIAL HOSES - general purpose



### SOFT PLUS

**Internal layer:** Yellow (Y) or blue (BL) PVC  
**Reinforcement:** Polyester braid  
**External layer:** Yellow (Y) or blue (BL) PVC  
**Working temp.:** From -25°C up to +60°C

Lightweight, ultra-flexible hose with excellent kink-resistance and no shape memory. Designed for air, water, slightly aggressive chemicals. Remains flexible in low temperatures. External layer is abrasion-resistant. Resistant to UV radiation and weather conditions. Hose material is free from cadmium and silicone, meets the requirements of RoHS. Standard length 20 m

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SH-SOFTPLUS-06Y	6.3	11.8	20	60	15	0.093	100
SH-SOFTPLUS-08BL	8	12.5	20	60	25	0.086	100
SH-SOFTPLUS-09Y	9.5	15.1	20	60	30	0.129	100
SH-SOFTPLUS-10BL	10	15	20	60	35	0.117	100
SH-SOFTPLUS-12Y	12.7	18.5	20	60	35	0.170	100



### SOFT PLUS / P

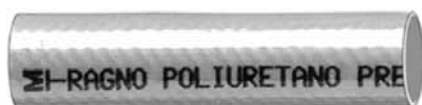
**Internal layer:** Yellow (Y) or blue (BL) PVC  
**Reinforcement:** Polyester braid  
**External layer:** Yellow (Y) or blue (BL) PVC  
**Working temp.:** From -20°C up to +60°C

Pneumatic extension hose - complete hose assembly for air, produced from SOFT PLUS hose. Fitted with a brass socket and Eurostandard DN7.2 plug. Perfect solution for connecting pneumatic tools, dampens vibration.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	length [m]
SH-SOFTPLUS-P-06-10Y	6.3	11.8	20	60	10
SH-SOFTPLUS-P-08-10BL	8	12.5	20	60	10
SH-SOFTPLUS-P-09-10Y	9.5	15.1	20	60	10
SH-SOFTPLUS-P-10-10BL	10	15	20	60	10
SH-SOFTPLUS-P-12-10Y	12.7	18.5	20	60	10
SH-SOFTPLUS-P-06-15Y	6.3	11.8	20	60	15
SH-SOFTPLUS-P-08-15BL	8	12.5	20	60	15
SH-SOFTPLUS-P-09-15Y	9.5	15.1	20	60	15
SH-SOFTPLUS-P-10-15BL	10	15	20	60	15
SH-SOFTPLUS-P-12-15Y	12.7	18.5	20	60	15



## INDUSTRIAL HOSES - general purpose



### RAGNO PU

**Internal layer 1:** Abrasive resistant polyurethane

**Internal layer 2:** PVC + rubber compound

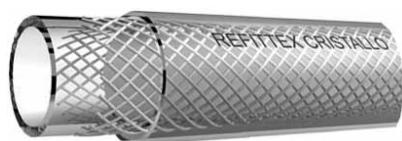
**Reinforcement:** Polyester braid

**External layer:** PVC + rubber compound

**Working temp.:** From -15°C up to +60°C

Very lightweight hose with a small bending radius, resistant to kinking. External layer resistant to ozone, fats, oils and slightly aggressive chemicals. Widely used for pneumatic tools, spray guns, painting guns, sandblasting, etc. Suitable for hose reel application. Compliant with European requirements for foodstuffs 1935/2004 EC and EU 10/2011 (simulant A, B and C).

code	I.D. [mm]	O.D. [mm]	working pressure 20°C [bar]	bursting pressure 20°C [bar]	standard length [m]
ME-RAGNO-PU-06	6	10	20	60	100
ME-RAGNO-PU-08	8	12	20	60	60
ME-RAGNO-PU-10	10	15	20	60	50
ME-RAGNO-PU-13	13	19	20	60	30
ME-RAGNO-PU-16	16	22.5	20	60	25



### REFITTEX CR

**Internal layer:** Transparent PVC

**Reinforcement:** Polyester braid

**External layer:** Transparent PVC

**Working temp.:** From -20°C up to +60°C

Flexible hose for general-purpose application. Used for the transfer of air, water, slightly aggressive chemicals, liquid and semi-liquid foodstuffs such as water, beer, wine, alcohol up to 28%, fruit juices, beverages etc. Not suitable for some foodstuffs containing oil and fat. Not suitable for dairy products. Meets the requirements of the EU Regulations 1935/2004 and 10/2011 (simulants A, B, C and D2) and KTW"C" for potable water. Safety factor 3:1.

code	I.D. [mm]	O.D. [mm]	working pressure 20°C [bar]	weight [kg/m]	standard length [m]
FT-REFITTEX-CR-04X10	4	10	30	0.08	100
FT-REFITTEX-CR-05X11	5	11	26	0.09	100
FT-REFITTEX-CR-06X12	6	12	20	0.10	100
FT-REFITTEX-CR-08X14	8	14	20	0.13	100
FT-REFITTEX-CR-09X15	9	15	20	0.14	50
FT-REFITTEX-CR-10X16	10	16	20	0.15	50
FT-REFITTEX-CR-12X18	12	18	12	0.17	50
FT-REFITTEX-CR-13X19	13	19	12	0.18	50
FT-REFITTEX-CR-15X21	15	21	12	0.21	50
FT-REFITTEX-CR-16X22	16	22	10	0.22	50
FT-REFITTEX-CR-19X26	19	26	10	0.30	50
FT-REFITTEX-CR-25X33	25	33	8	0.44	50
FT-REFITTEX-CR-30X38	30	38	7	0.51	50
FT-REFITTEX-CR-32X42	32	42	7	0.70	25
FT-REFITTEX-CR-38X48	38	48	6	0.80	25
FT-REFITTEX-CR-40X50	40	50	6	0.85	25
FT-REFITTEX-CR-50X64	50	64	5	1.50	25

## INDUSTRIAL HOSES - general purpose



### REFITTEX 20, 40, 80 BAR

**Internal layer:** Black, soft PVC  
**Reinforcement:** Textile braid (double for 80 bar)  
**External layer:** Black, soft PVC  
**Working temp.:** From -10°C up to +50°C

Lightweight, very flexible hose designed for compressed air transfer, water and slightly aggressive chemicals. Widely used in compressors and for misting, watering or spraying in agriculture. The external layer is resistant to abrasion and weather conditions.

code	I.D. [mm]	O.D. [mm]	working pressure 20°C [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
REFITTEX 20 BAR						
FT-REFITTEX20-06	6	11	20	60	0.087	50
FT-REFITTEX20-08	8	13	20	60	0.104	25, 50, 100
FT-REFITTEX20-10	10	15	20	60	0.125	25, 50, 100
FT-REFITTEX20-13	13	19	20	60	0.190	25, 50, 100
FT-REFITTEX20-16	16	23	20	60	0.270	50
FT-REFITTEX20-19	19	26	20	60	0.312	50
FT-REFITTEX20-25	25	33	20	60	0.460	50
REFITTEX 40 BAR						
FT-REFITTEX40-06	6	12	40	120	0.107	100
FT-REFITTEX40-08	8	14	40	120	0.132	50, 100
FT-REFITTEX40-10X16	10	16	40	120	0.156	50, 100
FT-REFITTEX40-10X17	10	17	40	120	0.188	50
FT-REFITTEX40-13	13	21	40	120	0.270	50, 100
FT-REFITTEX40-16	16	24	40	120	0.313	50
FT-REFITTEX40-19	19	28	40	120	0.410	50
FT-REFITTEX40-25	25	35	40	120	0.610	25
REFITTEX 80 BAR						
FT-REFITTEX80-08	8	15	80	240	0.160	50, 100
FT-REFITTEX80-10	10	18	80	240	0.222	50, 100
FT-REFITTEX80-13	13	23	80	240	0.357	50, 100
FT-REFITTEX80-16	16	26	80	240	0.415	50
FT-REFITTEX80-19	19	30	80	240	0.532	50

## INDUSTRIAL HOSES - general purpose



### METALFLEX PVC

**Material:** Transparent PVC  
**Reinforcement:** Steel wire helix  
**Working temp.:** From -10°C up to +65°C

Very flexible, suction-delivery hose developed to transfer air, water, beer, wine, alcohols up to 28% concentration, juices, beverages and slightly aggressive chemicals. Not recommended for food substances containing oil and fat as well as dairy products. Smooth internal and external layer. In compliance with European Directive UE 1935/2004 and 10/2011 (stimulant A, B and C).

code	I.D. [mm]	wall thickness [mm]	working press. 20°C [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
FT-MFLEX-PVC-010	10	2.6	8	0.9	20	0.16	30
FT-MFLEX-PVC-012	12	2.8	8	0.9	25	0.18	30
FT-MFLEX-PVC-013	13	3.1	8	0.9	28	0.19	30
FT-MFLEX-PVC-014	14	3	8	0.9	30	0.20	30
FT-MFLEX-PVC-016	16	3.2	8	0.9	35	0.23	30
FT-MFLEX-PVC-018	18	3.5	7	0.9	40	0.28	30
FT-MFLEX-PVC-019	19	3.4	7	0.9	45	0.31	30
FT-MFLEX-PVC-020	20	3.6	7	0.9	50	0.34	30
FT-MFLEX-PVC-025	25	4	6	0.9	60	0.51	30
FT-MFLEX-PVC-030	30	4	5	0.9	70	0.60	30
FT-MFLEX-PVC-032	32	4.1	5	0.9	75	0.65	30
FT-MFLEX-PVC-035	35	4.2	5	0.9	80	0.73	30
FT-MFLEX-PVC-038	38	4.4	4	0.9	90	0.80	30
FT-MFLEX-PVC-040	40	4.5	5	0.9	95	0.87	30
FT-MFLEX-PVC-045	45	5	5	0.8	105	1.10	30
FT-MFLEX-PVC-050	50	5.2	5	0.8	125	1.20	30
FT-MFLEX-PVC-060	60	6	4	0.7	135	1.80	30
FT-MFLEX-PVC-063	63	6	4	0.7	150	1.95	30
FT-MFLEX-PVC-070	70	6	4	0.7	180	2.20	30
FT-MFLEX-PVC-076	76	6	4	0.7	195	2.50	30
FT-MFLEX-PVC-080	80	6.2	3	0.7	220	2.70	30
FT-MFLEX-PVC-090	90	7	3	0.6	260	3.00	30
FT-MFLEX-PVC-102	102	7.5	3	0.6	335	3.40	30
FT-MFLEX-PVC-110	110	7.5	2	0.6	335	3.67	30
FT-MFLEX-PVC-120	120	8	2	0.6	363	4.40	30
FT-MFLEX-PVC-127	127	8	2	0.6	385	4.70	30
FT-MFLEX-PVC-152	152	8.4	1	0.6	460	6.35	30

## INDUSTRIAL HOSES - general purpose



### ARMORVIN PRESS PU

**Internal layer:** Transparent polyurethane

**Reinforcement:** Steel wire helix

**External layer:** Transparent polyurethane

**Working temp.:** From -20°C up to +90°C

Lightweight, very flexible suction and delivery hose used for pneumatic and hydraulic applications as well as to transfer chemicals and semi-fluid food substances (in compliance with FDA 21 CFR 177.2600 stimulant E and F). Resistant to oils and hydrocarbons.

code	I.D. [mm]	wall thickness [mm]	working pressure 20°C [bar]	bursting pressure [bar]		vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
				20°C	70°C				
ME-ARMPREPU-05	5	2.5	20	130	28	0.9	20	0.08	60
ME-ARMPREPU-06	6	2.5	20	125	26	0.9	23	0.10	60
ME-ARMPREPU-08	8	2.7	18	110	24	0.9	32	0.14	60
ME-ARMPREPU-09	9.5	3	18	105	23	0.9	38	0.17	60
ME-ARMPREPU-10	10	3	17	100	23	0.9	40	0.18	60
ME-ARMPREPU-12	12	3	16	85	21	0.9	45	0.21	60
ME-ARMPREPU-13	13	3.1	15	80	20	0.9	50	0.23	60
ME-ARMPREPU-14	14	3.2	14	78	19	0.9	56	0.26	60
ME-ARMPREPU-16	16	3.5	14	75	18	0.9	63	0.29	60
ME-ARMPREPU-18	18	3.5	12	73	17	0.9	70	0.34	60
ME-ARMPREPU-19	19	3.5	12	72	17	0.9	76	0.35	60
ME-ARMPREPU-20	20	3.5	12	70	16	0.9	80	0.37	60

## INDUSTRIAL HOSES - general purpose



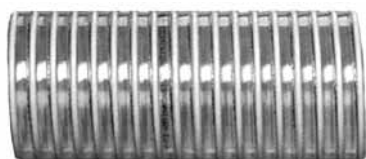
### VACUPRESS SUPERELASTIC

**Internal layer:** White PVC  
**Reinforcement:** Polyester braid, steel wire helix  
**External layer:** Black PVC  
**Working temp.:** From -25°C up to +60°C

Flexible suction-delivery hose designed to transfer dry foods, food substances such as water, beer, wine, alcohols up to 28% concentration, juices, beverages. Not recommended for food substances containing oil and fat as well as dairy products. In compliance with European Directive 1935/2004 CE, UE 10/2011 (stimulant A, B and C). Widely used in industrial applications as well as for loading and unloading of tank trucks. Remains very flexible even at low temperatures. Smooth internal layer improves cleaning maintenance and loading/unloading performance and time by 20%. It is resistant to weather conditions and abrasion (according to ISO 4649: mm<sup>3</sup> <160). Available with antistatic wire on request. For wine and juice industry a special version - VACUPRESS ENO with red external layer is available.

code	I.D. [mm]	O.D. [mm]	working press. 20°C [bar]	bursting press. 20°C [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
ME-VACUPRSE-019	19	28	20	60	0.9	70	0.47	60
ME-VACUPRSE-025	25	35.6	16	48	0.9	80	0.68	60
ME-VACUPRSE-030	30	40.6	16	48	0.9	90	0.77	60
ME-VACUPRSE-032	32	42.6	16	48	0.9	100	0.80	60
ME-VACUPRSE-035	35	47	14	42	0.9	115	1.05	60
ME-VACUPRSE-038	38	51	14	42	0.9	125	1.20	30
ME-VACUPRSE-040	40	53	14	42	0.9	130	1.22	30
ME-VACUPRSE-045	45	58	12	36	0.9	140	1.34	30
ME-VACUPRSE-050	50	63	12	36	0.9	150	1.60	30
ME-VACUPRSE-060	60	74	12	36	0.9	180	2.00	30
ME-VACUPRSE-063	63	77	12	36	0.9	190	2.10	30
ME-VACUPRSE-076	76	92	12	36	0.9	210	2.90	30
ME-VACUPRSE-080	80	96	10	30	0.9	220	2.95	30
ME-VACUPRSE-090	90	107	10	30	0.9	250	3.50	30
ME-VACUPRSE-102	102	119	10	30	0.9	300	4.00	30
ME-VACUPRSE-120	120	138	8	24	0.9	350	5.30	20
ME-VACUPRSE-127	127	145	7	21	0.9	370	5.80	20
ME-VACUPRSE-152	152	171	5	15	0.9	480	6.85	20

## INDUSTRIAL HOSES - general purpose



### AGROFLEX LD

**Material:** Green transparent PVC  
**Reinforcement:** Rigid PVC spiral  
**Working temp.:** From -10°C up to +50°C

Lightweight, flexible, suction-delivery hose designed to transfer water, slightly aggressive chemicals, pest control products, etc.

code	I.D. [mm]	O.D. [mm]	working press. 20°C [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
FT-AGROFLEX-LD-019	19	24	6	0.6	100	0.18	50
FT-AGROFLEX-LD-025	25	30.4	6	0.6	130	0.25	50
FT-AGROFLEX-LD-032	32	37.8	6	0.6	170	0.33	50
FT-AGROFLEX-LD-038	38	44.4	5	0.6	210	0.42	50
FT-AGROFLEX-LD-040	40	46.8	5	0.6	220	0.46	50
FT-AGROFLEX-LD-045	45	51.8	5	0.6	260	0.53	50
FT-AGROFLEX-LD-050	50	57	5	0.6	280	0.66	50
FT-AGROFLEX-LD-060	60	68	4	0.5	350	0.84	50
FT-AGROFLEX-LD-063	63	71.2	4	0.5	370	0.90	50
FT-AGROFLEX-LD-076	76	84.8	4	0.5	530	1.15	50
FT-AGROFLEX-LD-090	90	99.6	3	0.4	630	1.55	30
FT-AGROFLEX-LD-100	100	110	3	0.4	680	1.80	30
FT-AGROFLEX-LD-125	125	136	2	0.3	780	2.80	20
FT-AGROFLEX-LD-150	150	162.6	2	0.3	880	3.80	20



### LUISIANA SUPERELASTIC

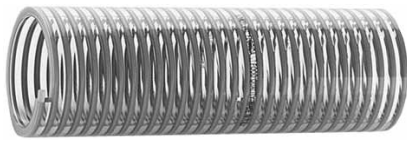
**Material:** Green transparent PVC  
**Reinforcement:** Rigid PVC spiral  
**Working temp.:** From -25°C up to +55°C

Lightweight, very flexible, suction-delivery hose designed to transfer water, slightly aggressive chemicals, pest control products, etc.

code	I.D. [mm]	wall thickness [mm]	working press. 20°C [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
ME-LUISIANA-SE-020	20	3.1	6.5	0.7	65	0.28	50
ME-LUISIANA-SE-025	25	3.3	6.5	0.7	100	0.33	50
ME-LUISIANA-SE-030	30	3.5	5.5	0.7	125	0.42	50
ME-LUISIANA-SE-032	32	3.6	5.5	0.7	135	0.46	50
ME-LUISIANA-SE-035	35	3.4	5	0.7	145	0.50	50
ME-LUISIANA-SE-038	38	3.7	4.5	0.7	155	0.55	50
ME-LUISIANA-SE-040	40	3.8	4.5	0.7	160	0.61	50
ME-LUISIANA-SE-045	45	3.7	4	0.7	180	0.67	50
ME-LUISIANA-SE-050	50	4.1	3.5	0.7	200	0.81	50
ME-LUISIANA-SE-060	60	4.5	3.5	0.7	245	0.97	50
ME-LUISIANA-SE-063	63	4	3.5	0.7	260	1.04	50
ME-LUISIANA-SE-076	76	5.2	2.5	0.7	315	1.38	50
ME-LUISIANA-SE-102	102	6.2	2.5	0.7	430	2.20	25
ME-LUISIANA-SE-127	127	6.3	2	0.5	670	3.13	25
ME-LUISIANA-SE-152	152	7.2	2	0.5	750	4.25	25



## INDUSTRIAL HOSES - general purpose



### FLORIDA

**Material:** Transparent PVC  
**Reinforcement:** Rigid PVC spiral  
**Working temp.:** From -5°C up to +60°C

Lightweight, flexible suction-delivery hose designed to transfer water, beer, wine, alcohols up to 28% concentration, juices, beverages and slightly aggressive chemicals. Not recommended for food substances containing oil and fat as well as dairy products. In compliance with European Directive 1935/2004 CE, UE 10/2011 (stimulant A, B and C).

code	I.D. [mm]	wall thickness [mm]	working press. 20°C [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
ME-FLORIDA-020	20	2.4	6.5	0.6	110	0.21	25
ME-FLORIDA-025	25	2.4	6.5	0.6	140	0.25	25
ME-FLORIDA-030	30	2.5	6	0.6	175	0.33	25
ME-FLORIDA-032	32	2.6	6	0.6	180	0.35	25
ME-FLORIDA-035	35	2.7	6	0.6	195	0.40	25
ME-FLORIDA-038	38	2.8	6	0.6	210	0.43	25
ME-FLORIDA-040	40	3	5.5	0.6	220	0.48	25
ME-FLORIDA-045	45	3.5	5.5	0.6	255	0.64	25
ME-FLORIDA-050	50	4	5.5	0.6	275	0.76	25
ME-FLORIDA-055	55	4.3	5.5	0.6	310	0.86	25
ME-FLORIDA-060	60	4.3	4	0.6	330	0.90	25
ME-FLORIDA-063	63	4.1	4	0.6	350	0.97	25
ME-FLORIDA-070	70	4.5	3	0.6	450	1.13	25
ME-FLORIDA-075	75	4.7	3	0.6	500	1.20	25
ME-FLORIDA-080	80	4.7	3	0.6	550	1.45	25



### CHANTIER

**Internal layer:** Black PVC  
**Reinforcement:** Polyester braid  
**External layer:** Orange PVC  
**Working temp.:** From -15°C up to +60°C

General purpose, flexible, delivery hose used for water and slightly aggressive chemicals. Fluorescent external layer provides good visibility in limited lighting conditions. Safety factor 3:1.

code	I.D. [mm]	O.D. [mm]	working press. 20°C [bar]	bursting press. 20°C [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TR-CHANTIER-19	19	25.5	9	27	112.5	0.29	50

## INDUSTRIAL HOSES - general purpose



### NIPLAFLEX

**Internal layer:** Black NBR/PVC compound

**Reinforcement:** Synthetic braid

**External layer:** Black NBR/PVC compound

**Working temp.:** From -20°C up to +70°C

General purpose, highly flexible hose used for water, air, oil, petrol, grease, many chemicals, pesticides, etc. Suitable for AdBlue. Non-staining external layer resistant to ageing and ozone.

code	I.D. [mm]	wall thickness [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
BG-NIPLAFLEX-06	6	3	12	25	75	0.11	100
BG-NIPLAFLEX-08	8	3.5	15	25	75	0.17	100
BG-NIPLAFLEX-09	9	3.5	16	25	75	0.19	100
BG-NIPLAFLEX-10	10	3.5	17	25	75	0.20	100
BG-NIPLAFLEX-13	13	4	21	25	75	0.28	100
BG-NIPLAFLEX-19	19	4.5	28	25	75	0.44	50



### VARIFLEX® 300

**Internal layer:** Black NBR rubber

**Reinforcement:** Synthetic braid

**External layer:** Blue rubber compound  
Chemivic® (NBR + vinyl)

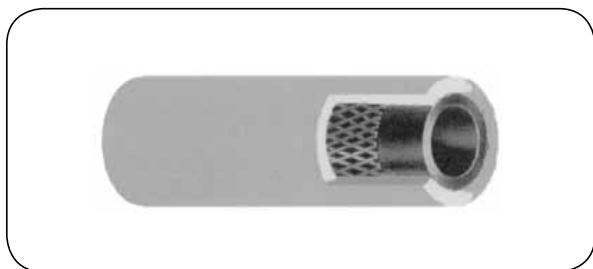
**Working temp.:** From -30°C up to +90°C

Top grade (flexible, non-staining, kink and torsion resistant), general purpose hose used for a wide range of industrial applications such as: air, hot and cold water, oil, hydraulic fluids, slightly aggressive chemicals, diluted acids, cleaning fluids. Low elongation and high dimensional stability make the hose specially suited for hose reels. Nonconductive (R > 1 MΩ/m at 1000 V DC).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
GY-VARIFLEX300-10BL	9.5	17.5	20	80	80	0.28	152.5
GY-VARIFLEX300-13BL	12.7	21.8	20	80	100	0.39	152.5
GY-VARIFLEX300-16R*	15.9	25.9	20	80	130	0.49	152.5
GY-VARIFLEX300-19BL	19.1	30.2	20	80	160	0.63	152.5
GY-VARIFLEX300-25BL	25.4	38.1	20	80	200	0.92	137.3

\* - red external layer

## INDUSTRIAL HOSES - general purpose



### GORILLA®

**Internal layer:** Black NBR rubber

**Reinforcement:** Aramid fibre braid  
(synthetic braid for 2")

**External layer:** Special yellow Carbryn®  
(C-NBR) rubber

**Working temp.:** From -30°C up to +90°C

Top grade, highly flexible (with kink and torsion resistance) general purpose hose. Internal layer suitable for oil, fat, bases, air, kerosene, cold and hot water. External layer has excellent abrasion resistance and good resistance to animal fat and oil. External layer flame resistance meets MSHA 2G-14C/14 standards. High tensile strength and dimensional stability make the hose particularly suitable for hose reels. Nonconductive ( $R > 1 \text{ M}\Omega/\text{m}$  at 1000 V DC). Safety factor 4:1.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
GY-GORILLA-06	6.4	15.5	35	65	0.25	152.5
GY-GORILLA-08	7.9	17.5	35	80	0.30	152.5
GY-GORILLA-10	9.5	18.6	35	95	0.33	152.5
GY-GORILLA-13	12.7	22.6	35	130	0.42	152.5
GY-GORILLA-16	15.9	26.9	35	160	0.52	152.5
GY-GORILLA-19	19.1	30.2	35	190	0.61	152.5
GY-GORILLA-25	25.4	37.8	35	255	0.86	137.3
GY-GORILLA-32	31.8	45.6	35	320	1.18	122
GY-GORILLA-38	38.1	51.8	35	380	1.27	91.5
GY-GORILLA-51	50.8	66.6	35	510	1.76	152.5

# INDUSTRIAL HOSES - general purpose

## PUSH ON hoses

PUSH ON self-crimping hoses are designed for assembly with special PUSH ON fitting without bands or clamps. The fittings are just pushed into the hose. Due to the special construction of a hose braid, the hose crimps even more on the fitting as the pressure rises.



### PUSH-ON

**Internal layer:** Polyurethane  
**Reinforcement:** Synthetic braid  
**External layer:** Black polyurethane (STANDARD)  
 Orange polyurethane (NON CONDUCTIVE)  
**Working temp.:** From -40°C up to +80°C

Lightweight, flexible, thermoplastic hose intended for low pressure pneumatic and hydraulic applications. Widely used in automotive industry. It is free from linear alkyl benzene sulfonate (LABS), so it does not react with paints. A NON CONDUCTIVE version does not conduct electric charges - leakage current in test conditions according to the standard less than 50 µA at 246 kV/m for 5 min. Hose designed to be assembled with self-crimping fittings, PUSH-ON type.

code (STANDARD)	code (NON CONDUCTIVE)	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
TO-1062-06	TO-1072-06	6.3	11.2	20	80	30	7.50
TO-1064-10	TO-1074-10	9.5	15	20	80	50	11.50
TO-1065-13	TO-1075-13	12.7	19.1	20	80	70	17.00
TO-1066-16	TO-1076-16	16	23	20	80	90	22.00
TO-1067-19	TO-1077-19	19	26	20	80	110	24.50



### INSTA-GRIP™ 300

**Internal layer:** Black synthetic Chemivac™ rubber (NBR + vinyl)  
**Reinforcement:** Synthetic braid  
**External layer:** Blue synthetic rubber (red, green, grey, yellow and black also available)  
**Working temp.:** From -40°C up to +90°C

General purpose delivery hose designed for pneumatic and hydraulic applications. Widely used in automotive industry (no silicone used during hose production). External layer has excellent abrasion, weather condition and oil resistance. External layer flame resistance meets MSHA 2G-14C/14 standards. Nonconductive (R >1 MΩ/m at 1000 V DC). Safety factor 4:1. For use with PUSH-ON fittings. When ordering a colour other than blue, simply change BL at the end of the code for RD (red), G (green), GY (grey), Y (yellow), BK (black).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
GY-INSTAGRIP300-06BL	6.4	13.7	20	65	0.13	152.5
GY-INSTAGRIP300-08BL	7.9	15.7	20	75	0.18	152.5
GY-INSTAGRIP300-10BL	9.5	17.5	20	75	0.21	152.5
GY-INSTAGRIP300-13BL	12.7	20.6	20	130	0.25	152.5
GY-INSTAGRIP300-16BL	15.9	23.6	20	150	0.30	152.5
GY-INSTAGRIP300-19BL	19.1	27.2	20	180	0.39	152.5

# INDUSTRIAL HOSES - general purpose

## PUSH-ON fittings

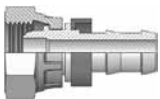
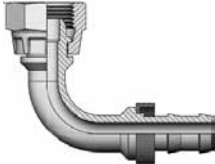




The application of PUSH ON fittings is restricted to hoses designed exclusively for these fittings (PUSH ON hose type). The fitting connects with the hose without clamps or safety clamps. Special corrugations of the fitting are adjusted to the material, sizes of PUSH ON hoses and the construction of their braid, which allows tight grip of the hose on the fitting corrugations.

Push-on assembly:

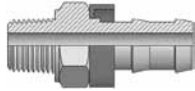
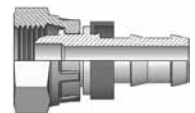
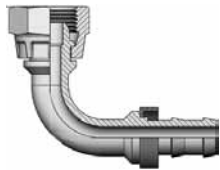
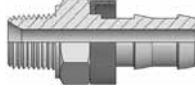
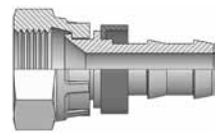
- cut a hose end square;
- fix a fitting in a vice;
- lubricate the „tail” of the fitting;
- push the fitting into the hose until it seats well against a plastic stopper.

Working temperature: from -40°C up to +80°C. Working pressure according to PUSH ON hose working parameters. PUSH ON fittings must not be used with other hoses or crimped with clamps or safety clamps as the hose may get damaged.

picture	code (galvanized steel)	code (brass)	code (AISI 316)	thread size [inch]	hose I.D. [inch]
BSP female thread, 60° cone seal 	TI-YBW110-04-04	TI-YBW110-04-04-MO	TI-YBW110-04-04-SS	1/4	1/4
	TI-YBW110-06-06	TI-YBW110-06-06-MO	TI-YBW110-06-06-SS	3/8	3/8
	TI-YBW110-08-08	TI-YBW110-08-08-MO	TI-YBW110-08-08-SS	1/2	1/2
	TI-YBW110-10-10	TI-YBW110-10-10-MO	TI-YBW110-10-10-SS	5/8	5/8
	TI-YBW110-12-10	TI-YBW110-12-10-MO	TI-YBW110-12-10-SS	3/4	5/8
	TI-YBW110-12-12	TI-YBW110-12-12-MO	TI-YBW110-12-12-SS	3/4	3/4
BSP female thread, 60° cone seal 	TI-YBW210-04-04	-	TI-YBW210-04-04-SS	1/4	1/4
	TI-YBW210-06-06	-	TI-YBW210-06-06-SS	3/8	3/8
	TI-YBW210-08-08	-	TI-YBW210-08-08-SS	1/2	1/2
	TI-YBW210-12-10	-	TI-YBW210-12-10-SS	3/4	5/8
	TI-YBW210-12-12	-	TI-YBW210-12-12-SS	3/4	3/4
BSP female thread, 60° cone seal 	TI-YBW310-04-04	-	TI-YBW310-04-04-SS	1/4	1/4
	TI-YBW310-06-06	-	TI-YBW310-06-06-SS	3/8	3/8
	TI-YBW310-08-08	-	TI-YBW310-08-08-SS	1/2	1/2
	TI-YBW310-12-12	-	TI-YBW310-12-12-SS	3/4	3/4
BSP male thread, 60° cone seal 	TI-YBZ110-04-04	TI-YBZ110-04-04-MO	TI-YBZ110-04-04-SS	1/4	1/4
	TI-YBZ110-06-06	TI-YBZ110-06-06-MO	TI-YBZ110-06-06-SS	3/8	3/8
	TI-YBZ110-08-08	TI-YBZ110-08-08-MO	TI-YBZ110-08-08-SS	1/2	1/2
	TI-YBZ110-10-10	TI-YBZ110-10-10-MO	TI-YBZ110-10-10-SS	5/8	5/8
	TI-YBZ110-12-12	TI-YBZ110-12-12-MO	TI-YBZ110-12-12-SS	3/4	3/4

# INDUSTRIAL HOSES - general purpose

## PUSH-ON fittings

picture	code (galvanized steel)	code (brass)	code (AISI 316)	thread size [inch]	hose I.D. [inch]
<b>BSPT male thread</b>  	TI-YBZ130-04-04	TI-YBZ130-04-04-MO	TI-YBZ130-04-04-SS	1/4	1/4
	TI-YBZ130-06-06	TI-YBZ130-06-06-MO	TI-YBZ130-06-06-SS	3/4	3/8
	TI-YBZ130-08-08	TI-YBZ130-08-08-MO	TI-YBZ130-08-08-SS	1/2	1/2
	TI-YBZ130-10-10	TI-YBZ130-10-10-MO	TI-YBZ130-10-10-SS	5/8	5/8
	TI-YBZ130-12-12	TI-YBZ130-12-12-MO	TI-YBZ130-12-12-SS	3/4	3/4
<b>Metric female thread. 24°/60 cone seal</b>  	TI-YMW111-14-04	TI-YMW111-14-04-MO	TI-YMW111-14-04-SS	M14x1.5	1/4
	TI-YMW111-16-06	TI-YMW111-16-06-MO	TI-YMW111-16-06-SS	M16x1.5	3/8
	TI-YMW111-18-06	TI-YMW111-18-06-MO	TI-YMW111-18-06-SS	M18x1.5	3/8
	TI-YMW111-22-08	TI-YMW111-22-08-MO	TI-YMW111-22-08-SS	M22x1.5	1/2
	TI-YMW111-26-10	TI-YMW111-26-10-MO	TI-YMW111-26-10-SS	M26x1.5	5/8
	TI-YMW111-30-12	TI-YMW111-30-12-MO	TI-YMW111-30-12-SS	M30x2	3/4
<b>Metric female thread. 24°/60 cone seal</b>  	TI-YMW211-14-04	-	TI-YMW211-14-04-SS	M14x1.5	1/4
	TI-YMW211-16-06	-	TI-YMW211-16-06-SS	M16x1.5	3/8
	TI-YMW211-18-06	-	TI-YMW211-18-06-SS	M18x1.5	3/8
	TI-YMW211-22-08	-	TI-YMW211-22-08-SS	M22x1.5	1/2
	TI-YMW211-26-10	-	TI-YMW211-26-10-SS	M26x1.5	5/8
	TI-YMW211-30-12	-	TI-YMW211-30-12-SS	M30x2	3/4
<b>NPT male thread. 60° cone seal</b>  	TI-YNZ110-04-04	TI-YNZ110-04-04-MO	TI-YNZ110-04-04-SS	1/4	1/4
	TI-YNZ110-06-06	TI-YNZ110-06-06-MO	TI-YNZ110-06-06-SS	3/8	3/8
	TI-YNZ110-08-08	TI-YNZ110-08-08-MO	TI-YNZ110-08-08-SS	1/2	1/2
	TI-YNZ110-12-12	TI-YNZ110-12-12-MO	TI-YNZ110-12-12-SS	3/4	3/4
<b>UNF female thread. JIC 74° cone seal</b>  	TI-YJW110-07-04	TI-YJW110-07-04-MO	TI-YJW110-07-04-SS	7/16-20	1/4
	TI-YJW110-09-06	TI-YJW110-09-06-MO	TI-YJW110-09-06-SS	9/16-18	3/8
	TI-YJW110-12-08	TI-YJW110-12-08-MO	TI-YJW110-12-08-SS	3/4-16	1/2
	TI-YJW110-14-08	TI-YJW110-14-08-MO	TI-YJW110-14-08-SS	7/8-14	1/2
	TI-YJW110-14-10	TI-YJW110-14-10-MO	TI-YJW110-14-10-SS	7/8-14	5/8
	TI-YJW110-17-12	TI-YJW110-17-12-MO	TI-YJW110-17-12-SS	1.1/16-16	3/4

# INDUSTRIAL HOSES - air and water

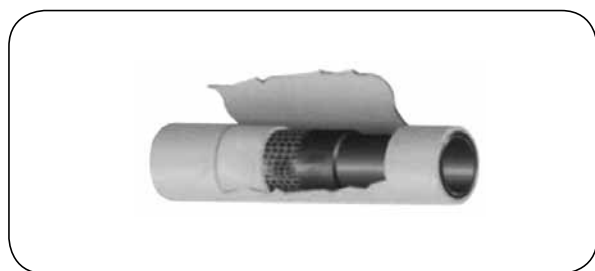
## Characteristics

Hoses for air and water designed for industrial water, sewage, cooling water, washdown, compressed air (compressors, pneumatic tools, hose reels) and some for food products. Made of rubber, PVC, polyethylene with textile braid, PVC or steel wire helix. Apart from general purpose hoses in this group we distinguish hoses for:

- cooling installations in steel mills,
- fire equipment,
- portable toilets,
- car and rail brake systems,
- cooling systems in cars,
- motor and pleasure boats,
- snow cannons,
- hot air in tank trucks.

Fittings for air and water hoses (see chapter "INDUSTRIAL FITTINGS - fittings, connectors") can be mounted with worm drive clamps, safety clamps or crimped.

For air and water hoses see also: food hoses, steel hoses, PTFE hoses, TYGON®, or chapters: "HIGH PRESSURE" and "INDUSTRIAL PNEUMATICS".



## TRICOFLEX

**Internal layer:** Two layers of black PVC

**Reinforcement:** Strong textile braid

**External layer:** Yellow PVC

**Working temp.:** From -15°C up to +60°C

General purpose flexible delivery hose. Double internal layer and a strong textile knitted braid ensure better tensile strength. External layer resistant to abrasion and UV radiation. Due to its construction recommended for irrigation systems in agriculture, gardening and construction industry.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TR-TRICOFLEX-13	12.5	18	10	25	62.5	0.14	50
TR-TRICOFLEX-15	15	20.5	10	25	67.5	0.18	50
TR-TRICOFLEX-19	19	25.5	9.2	23	90	0.26	50
TR-TRICOFLEX-25	25	32.5	8	20	120	0.44	50
TR-TRICOFLEX-30	30	39	8	20	150	0.64	50
TR-TRICOFLEX-35	35	45	8	20	175	0.82	50
TR-TRICOFLEX-40	40	51	8	20	200	1.03	50
TR-TRICOFLEX-50	50	63	8	20	250	1.51	50

## INDUSTRIAL HOSES - air and water



### VACUPRESS FLEX

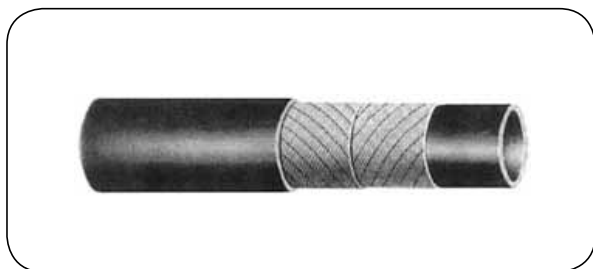
**Internal layer:** Black plasticized PVC  
**Reinforcement:** Polyester yarn, steel wire helix  
**External layer:** Black plasticized PVC  
**Working temp.:** From -25°C up to +60°C

Highly flexible, lighter than rubber hoses, suction-delivery hose designed to transfer dry materials, water, sewage, mud. Widely used in irrigation systems, loading and unloading of tank trucks, industrial plant engineering, etc. Remains very flexible even at low temperatures. Smooth internal and external layer facilitate maintaining highest hygiene standards and increase reloading rate by 20%. Resistant to weather conditions and abrasion (according to ISO 4649: 150 mm<sup>3</sup>). Available in straight (not bent) lengths from 3 to 6 meters.

code	I.D. [mm]	O.D. [mm]	working press. 20°C [bar]	bursting press. 20°C [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
ME-VACUPRFX-050	50	63	12	36	0.9	150	1.60	30
ME-VACUPRFX-060	60	74	12	36	0.9	180	2.00	30
ME-VACUPRFX-076	76	92	12	36	0.9	210	2.90	30
ME-VACUPRFX-080	80	96	10	30	0.9	220	2.95	30
ME-VACUPRFX-090	90	107	10	30	0.9	250	3.50	30
ME-VACUPRFX-102	102	119	10	30	0.9	300	4.00	30
ME-VACUPRFX-120	120	138	8	24	0.9	350	5.30	20
ME-VACUPRFX-127	127	145	7	21	0.9	370	5.80	20
ME-VACUPRFX-152	152	171	5	15	0.9	480	6.85	20



## INDUSTRIAL HOSES - air and water

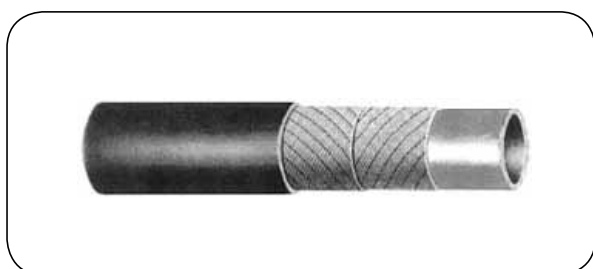


### TUBES 2116

**Internal layer:** Black EPDM rubber  
**Reinforcement:** Polyester braid  
**External layer:** Red EPDM rubber  
**Working temp.:** From -40°C up to +100°C

General purpose industrial hose designed for air and water transfer. Widely used in hot water washdown applications to clean floors and equipment. Suitable for outdoor usage. Resistant to weather conditions and abrasion.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
PR-TU2116-13	13	21	10	40	40	0.27	60
PR-TU2116-16	16	26	10	40	60	0.41	60
PR-TU2116-19	19	28.5	10	40	90	0.45	60
PR-TU2116-25	25	35	10	40	120	0.60	40



### TUBES 2116 T

**Internal layer:** White EPDM rubber  
**Reinforcement:** Polyester braid  
**External layer:** Red or blue EPDM rubber  
**Working temp.:** From -40°C up to +100°C

General purpose industrial hose designed for air and water transfer. Widely used in hot water washdown applications to clean floors and equipment. Suitable for outdoor usage. Resistant to weather conditions and abrasion.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TUBES 2116 T (red external layer)							
PR-TU2116T-13R	13	23	10	40	152	0.44	100
PR-TU2116T-16R	16	28	10	40	191	0.63	100
PR-TU2116T-19R	19	32	10	40	228	0.79	100
PR-TU2116T-25R	25	39	10	40	305	1.041	100
TUBES 2116 T (blue external layer)							
PR-TU2116T-13BL	13	23	10	40	152	0.44	100
PR-TU2116T-16BL	16	28	10	40	191	0.63	100
PR-TU2116T-19BL	19	32	10	40	228	0.79	100
PR-TU2116T-25BL	25	39	10	40	305	1.041	100

## INDUSTRIAL HOSES - air and water



### MICHIGAN®

**Internal layer:** White SBR rubber  
**Reinforcement:** Synthetic braid  
**External layer:** White EPDM rubber  
**Working temp.:** From -40°C up to +80°C

Industrial hose designed for washdown application to clean floors and equipment in e.g. meat, food and dairy industries. Suitable for outdoor usage. Resistant to weather conditions and abrasion.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-MICHIGAN-013	13	20	10	30	0.24	120
IV-MICHIGAN-016	16	24	10	30	0.31	120
IV-MICHIGAN-019	19	26	10	30	0.29	120
IV-MICHIGAN-025	25	34	10	30	0.54	120
IV-MICHIGAN-032	32	46	10	30	1.10	120
IV-MICHIGAN-038	38	54	10	30	1.44	120



### CODAN 1225, 1228, 1229

**Internal layer:** Black EPDM rubber  
**Reinforcement:** Synthetic braid  
**External layer:** EPDM rubber (1225 - black, 1228 - blue, 1229 - red)  
**Working temp.:** From -30°C up to +95°C (20 bar)  
 From -30°C up to +140°C (10 bar)  
 (with peaks up to +160°C).

Special purpose hose designed for particularly heavy working conditions that require flexibility, resistance to weather conditions and ozone. Recommended for air and water, for injection moulds in particular. The application in temperature above +95°C shortens hose service life.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
CO-122...-10	9.5	16.5	20	60	50	0.23	50
CO-122...-13	12.7	21.5	20	60	65	0.36	50
CO-122...-19	19	27	20	60	105	0.45	30
CO-122...-25	25	35.5	20	60	145	0.80	30

## INDUSTRIAL HOSES - air and water



### OSLO 10®

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Synthetic braid  
**External layer:** Black synthetic rubber  
**Working temp.:** From -25°C up to +70°C

Delivery hose designed for the most severe working conditions. Widely used for water transfer, irrigation and draining systems, sewer cleaning, etc. Resistant to abrasion and ozone.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-OSLO10-032	32	38	10	30	0.42	120
IV-OSLO10-038	38	45	10	30	0.54	120
IV-OSLO10-051	51	58	10	30	0.73	120
IV-OSLO10-063	63.5	70	10	30	0.79	120
IV-OSLO10-076	76	83	10	30	1.04	120
IV-OSLO10-090	90	98	10	30	1.43	120
IV-OSLO10-102	102	110	10	30	1.58	120
IV-OSLO10-110	110	118	10	30	1.64	120
IV-OSLO10-127	127	135	10	30	1.92	120
IV-OSLO10-152	152	160	10	30	2.29	120
IV-OSLO10-203	203	215.5	10	30	4.76	120
IV-OSLO10-254	254	270	10	30	7.87	120



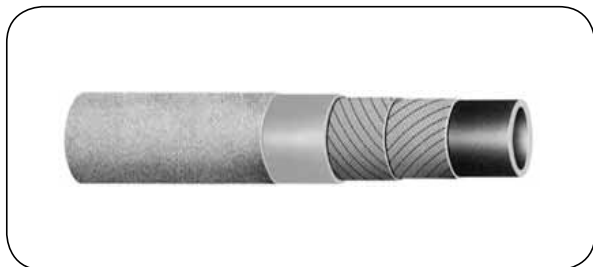
### TORONTO LIGHT®

**Internal layer:** Black SBR rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Black SBR rubber  
**Working temp.:** From -30°C up to +70°C

Suction and delivery hose designed to transfer industrial water, sewage, mud, drainage, etc. Resistance to kinking and a strong construction makes it suitable for heavy-duty applications. Vacuum 0.9 bar. Resistant to weather conditions.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-TORONTO-L-019	19	27	10	30	95	0.41	120
IV-TORONTO-L-025	25	33	10	30	125	0.51	120
IV-TORONTO-L-032	32	40	10	30	160	0.65	120
IV-TORONTO-L-038	38	47.5	10	30	190	0.94	120
IV-TORONTO-L-040	40	49.5	10	30	200	0.98	120
IV-TORONTO-L-051	51	60.5	10	30	255	1.14	120
IV-TORONTO-L-063	63.5	75	10	30	381	2.10	120
IV-TORONTO-L-076	76	87	10	30	456	2.41	120
IV-TORONTO-L-102	102	114	10	30	612	3.69	120
IV-TORONTO-L-110	110	125	10	30	770	3.97	120
IV-TORONTO-L-127	127	143	10	30	889	5.17	120
IV-TORONTO-L-152	152	170.5	10	30	1064	7.27	120
IV-TORONTO-L-203	203	225	10	30	1421	12.31	60
IV-TORONTO-L-254	254	278	5	15	1778	22.95	12

## INDUSTRIAL HOSES - air and water

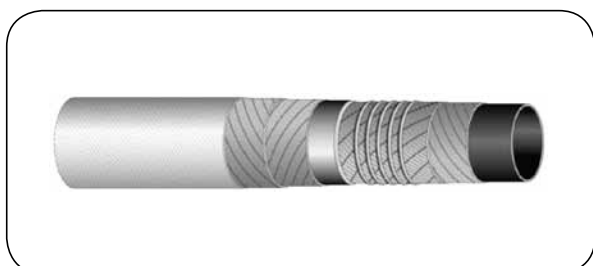


### ESSEN®

**Internal layer:** Black EPDM rubber  
**Reinforcement:** Synthetic braid  
**External layer:** EPDM rubber covered with glass fibre  
**Working temp.:** From -40°C up to +120°C (external layer up to +530°C)

Delivery hose designed for cooling water transfer in steel mills, foundries and any application where a rubber hose operates close to the source of heat. Resistant to high ambient temperature. Widely used in cooling systems. Particularly recommended for water installations at metallurgical furnaces. Resistant to the temporary impact of hot metal splashes.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-ESSEN-013	13	23	10	30	0.33	120
IV-ESSEN-019	19	31.5	10	30	0.59	120
IV-ESSEN-025	25	37	10	30	0.69	120
IV-ESSEN-032	32	44	10	30	0.85	120
IV-ESSEN-038	38	53	10	30	1.32	120
IV-ESSEN-045	45	62	10	30	1.79	120
IV-ESSEN-051	51	67.5	10	30	1.89	120
IV-ESSEN-063	63.5	80	10	30	2.29	120
IV-ESSEN-076	76	96	10	30	3.30	120
IV-ESSEN-090	90	110	10	30	3.85	120
IV-ESSEN-102	102	124	10	30	4.82	120



### ESSEN / LL®

**Internal layer:** Black SBR rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** EPDM rubber covered with glass fibre  
**Working temp.:** From -40°C up to +70°C (external layer up to +530°C)

Suction - delivery hose designed for cooling water transfer in steel mills, foundries and any application where a rubber hose operates close to the source of heat. Resistant to high ambient temperature. Widely used in cooling systems. Particularly recommended for water installations at metallurgical furnaces. Resistant to the temporary impact of hot metal splashes. Vacuum 0.9 bar.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-ESSEN-LL-012	12	23	10	30	85	0.46	120
IV-ESSEN-LL-019	19	31	10	30	95	0.76	120
IV-ESSEN-LL-025	25	37	10	30	115	0.92	120
IV-ESSEN-LL-032	32	44	10	30	150	1.09	120
IV-ESSEN-LL-038	38	51	10	30	180	1.49	120
IV-ESSEN-LL-051	51	64	10	30	245	1.97	120
IV-ESSEN-LL-063	65	79	10	30	315	2.76	120
IV-ESSEN-LL-076	76	92	10	30	375	3.60	120
IV-ESSEN-LL-102	102	120	10	30	530	5.39	120

## INDUSTRIAL HOSES - air and water



### ESSEN 20®

**Internal layer:** White EPDM rubber

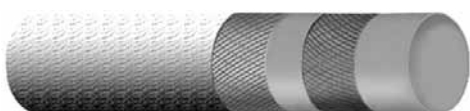
**Reinforcement:** Synthetic braid

**External layer:** EPDM rubber covered with glass fibre

**Working temp.:** From -40°C up to +120°C  
(external layer up to +530°C)

Delivery hose designed for cooling water transfer in steel mills, foundries and any application where a rubber hose operates close to the source of heat. Resistant to high ambient temperature. Widely used in cooling systems. Particularly recommended for water installations at metallurgical furnaces. Resistant to the temporary impact of hot metal splashes. Electrical resistance 10<sup>8</sup> Ω/m.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-ESSEN20-013	13	23	20	60	0.33	120
IV-ESSEN20-016	16	26	20	60	0.39	120
IV-ESSEN20-019	19	31	20	60	0.52	120
IV-ESSEN20-025	25	38.5	20	60	0.82	120
IV-ESSEN20-032	32	46.5	20	60	1.06	120
IV-ESSEN20-038	38	54	20	60	1.39	120
IV-ESSEN20-051	51	67	20	60	1.80	120
IV-ESSEN20-060	60	80	20	60	2.69	120
IV-ESSEN20-063	63.5	82.5	20	60	2.62	120
IV-ESSEN20-076	76	93.5	20	60	2.74	120
IV-ESSEN20-090	90	109.5	20	60	3.62	120
IV-ESSEN20-102	102	125	20	60	4.81	120



### GEYSER / 20 - ED / FV

**Internal layer:** Light-blue EPDM rubber

**Reinforcement:** Synthetic braid

**External layer:** White EPDM rubber covered with vulcanized glass fibre ply

**Working temp.:** From -35°C up to +120°C  
(external layer up to +400°C)

Delivery hose designed for cooling water transfer especially in metallurgical furnaces, electrical transformers and electrical transducers. Resistance to heat radiation (to +400°C) and splashes of hot metals. Internal layer resistant to electrical brakedown (E> = 5000 V/mm).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
MT-GEYSER20-EDFV-013	13	24	20	60	65	0.44	40
MT-GEYSER20-EDFV-019	19	32	20	60	95	0.62	40
MT-GEYSER20-EDFV-025	25	39	20	60	125	0.78	40
MT-GEYSER20-EDFV-032	32	48	20	60	160	1.05	40
MT-GEYSER20-EDFV-038	38	55	20	60	190	1.28	40
MT-GEYSER20-EDFV-050	50	68	20	60	250	1.78	40
MT-GEYSER20-EDFV-060	60	80	20	60	300	2.50	40
MT-GEYSER20-EDFV-075	75	95	20	60	380	2.90	40
MT-GEYSER20-EDFV-080	80	100	20	60	400	3.15	40
MT-GEYSER20-EDFV-100	100	124	20	60	500	4.90	40

Min. bending radius given for 1 bar working pressure.

## INDUSTRIAL HOSES - air and water



### DERBY RADIATOR

**Internal layer:** Black EPDM rubber  
**Reinforcement:** Synthetic braid  
**External layer:** Black EPDM rubber  
**Working temp.:** From -40°C up to +120°C

Hose designed for heating and cooling systems, automotive pumps and industrial machines.  
 Resistant to cooling fluids and manufactured according to DIN 73411 (1979) standards.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-RADIATOR-008	8	15	4	12	0.14	120
IV-RADIATOR-010	10	18	4	12	0.19	120
IV-RADIATOR-012	12	19	4	12	0.19	120
IV-RADIATOR-013	13	20	4	12	0.21	120
IV-RADIATOR-015	15	22	4	12	0.23	120
IV-RADIATOR-016	16	23	4	12	0.22	120
IV-RADIATOR-018	18	25	4	12	0.27	120
IV-RADIATOR-019	19	28	4	12	0.37	120
IV-RADIATOR-020	20	27	4	12	0.29	120
IV-RADIATOR-022	22	29	4	12	0.32	120
IV-RADIATOR-025	25	32	4	12	0.36	120
IV-RADIATOR-028	28	36	4	12	0.43	120
IV-RADIATOR-030	30	38	4	12	0.46	120
IV-RADIATOR-032	32	40	4	12	0.49	120
IV-RADIATOR-035	35	43	4	12	0.53	120
IV-RADIATOR-038	38	48	4	12	0.77	120
IV-RADIATOR-040	40	50	4	12	0.80	120
IV-RADIATOR-042	42	52	3	9	0.84	120
IV-RADIATOR-045	45	55	3	9	0.89	120
IV-RADIATOR-048	48	58	3	9	0.94	120
IV-RADIATOR-050	50	60	3	9	0.98	120
IV-RADIATOR-055	55	65	3	9	1.07	120
IV-RADIATOR-060	60	70	3	9	1.16	120
IV-RADIATOR-065	65	75	3	9	1.25	120
IV-RADIATOR-070	70	80	3	9	1.33	120
IV-RADIATOR-075	75	85	3	9	1.43	120
IV-RADIATOR-080	80	91.5	3	9	1.71	120
IV-RADIATOR-100	100	112.5	2	6	2.34	120
IV-RADIATOR-110	110	122	2	6	2.41	120
IV-RADIATOR-114	114	126	2	6	2.50	120

## INDUSTRIAL HOSES - air and water



### RADIATOR / LCL

**Internal layer:** Black CR rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Black CR rubber  
**Working temp.:** From -40°C up to +100°C

Suction-delivery square corrugated hose designed for hot water and anti-freeze liquids in cooling automotive systems and industrial vehicle engines. Internal layer resistant to anti-freeze liquids and external layer resistant to oil, heat and ageing. Available in lengths (1 - 2 meter) with soft ends on request.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-RADIATOR-LCL-16	16	26	4	12	60	0.42	60
IV-RADIATOR-LCL-18	18	26	4	12	65	0.46	60
IV-RADIATOR-LCL-20	20	28	4	12	70	0.50	60
IV-RADIATOR-LCL-22	22	32	4	12	80	0.51	60
IV-RADIATOR-LCL-25	25	35	4	12	85	0.57	60
IV-RADIATOR-LCL-28	28	36	4	12	95	0.59	60
IV-RADIATOR-LCL-30	30	38	4	12	100	0.63	60
IV-RADIATOR-LCL-32	32	42	4	12	105	0.70	60
IV-RADIATOR-LCL-35	35	45	4	12	115	0.76	60
IV-RADIATOR-LCL-38	38	48	4	12	130	0.82	60
IV-RADIATOR-LCL-40	40	50	4	12	135	0.85	60
IV-RADIATOR-LCL-42	42	52	4	12	140	0.89	60
IV-RADIATOR-LCL-45	45	55	4	12	150	0.95	60
IV-RADIATOR-LCL-50	50	60	4	12	165	1.04	60
IV-RADIATOR-LCL-51	51	61	4	12	165	1.06	60
IV-RADIATOR-LCL-55	55	65	4	12	180	1.13	60
IV-RADIATOR-LCL-60	60	72	4	12	200	1.30	60
IV-RADIATOR-LCL-70	70	82	3	9	230	1.50	60
IV-RADIATOR-LCL-76	76	89	3	9	250	2.10	60
IV-RADIATOR-LCL-90	90	102	3	9	300	2.45	60



### CONDITIONER HUMIDIFIER®

**Internal layer:** White butyl rubber  
**Reinforcement:** Synthetic braid  
**External layer:** White butyl rubber  
**Working temp.:** From -30°C up to +110°C

Softwall hose designed for hot water, low temperature steam, water condensate. Widely used in humidifiers as well as in air-conditioning installations.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-CONDITIONER-22	22	32	1	40	0.49	120
IV-CONDITIONER-30	30	40	1	40	0.64	120

## INDUSTRIAL HOSES - air and water

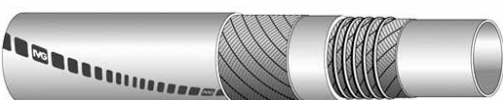


### BOAT ETNA

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Black, corrugated synthetic rubber  
**Working temp.:** From -30°C up to +100°C

Lightweight and very flexible suction-delivery hose designed to convey wet exhaust fumes in pleasure boats (exhaust of fumes and cooling water). External layer resistant to fire and weather conditions. According to Lloyds 99/00169 (E2) standards.

code	I.D. [mm]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-ETNA-032	32	5	130	0.65	60
IV-ETNA-038	38	5	150	0.75	60
IV-ETNA-040	40	5	160	0.78	60
IV-ETNA-045	45	5	170	0.87	60
IV-ETNA-051	51	5	180	1.07	60
IV-ETNA-058	58	5	190	1.20	60
IV-ETNA-063	63.5	5	200	1.30	60
IV-ETNA-076	76	5	250	1.46	60
IV-ETNA-090	90	5	330	1.73	60
IV-ETNA-102	102	5	410	2.06	60
IV-ETNA-127	127	5	560	2.58	60
IV-ETNA-152	152	5	680	3.18	60
IV-ETNA-203	203	5	995	5.52	60



### SANITARY / S

**Internal layer:** White synthetic rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** White synthetic rubber  
**Working temp.:** From -30°C up to +100°C

Hardwall, suction-delivery hose designed to transfer water, for sanitary installations on boats, motor boats, yachts, etc. Odour-free and odour impermeable (5-year guarantee). External layer resistant to marine and weather conditions. According to EN ISO 8099 standards.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-SANITARY-S-016	16	24	3	9	50	0.38	120
IV-SANITARY-S-019	19	27	3	9	60	0.43	120
IV-SANITARY-S-025	25	33	3	9	75	0.54	120
IV-SANITARY-S-038	38	46.5	3	9	150	0.87	120



## INDUSTRIAL HOSES - air and water



### STONEHOSE

**Internal layer:** Black PVC/NBR compound  
**Reinforcement:** Double polyester braid  
**External layer:** Black or yellow PVC/PU compound  
**Working temp.:** From -10°C up to +60°C

Lightweight, very flexible hose designed for compressed air. Highly resistant to abrasion and mineral oil. Yellow external layer ensures very good hose visibility. It is used for pneumatic hammers and air-drills.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting press. 20°C [bar]	bursting press. 60°C [bar]	weight [kg/m]	standard length [m]
ME-STONE-19	19	27	20	75	55	0.39	60
ME-STONE-25	25	35	20	75	55	0.60	60



### SUPER NOBELAIR SOFT

**Internal layer:** Black PVC  
**Reinforcement:** Polyester braid  
**External layer:** Blue PVC  
**Working temp.:** From -20°C up to +60°C

Highly flexible hose designed for compressed air. Due to such qualities as: lightweight, flexibility in low temperatures and resistance to elongation it is used for pneumatic tools, compressors, hose reels, etc.

code	I.D. [mm]	O.D. [mm]	working press. 20°C [bar]	bursting press. 20°C [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TR-SUPNOB-S-06	6.3	11	15	60	22.5	0.09	50
TR-SUPNOB-S-08	8	13	15	60	28	0.10	50
TR-SUPNOB-S-09	9	14.5	15	60	31.5	0.13	50
TR-SUPNOB-S-10	10	15.5	15	60	35	0.14	50
TR-SUPNOB-S-12	12.7	19	15	60	44.5	0.20	50
TR-SUPNOB-S-16	16	23	15	60	56	0.27	50
TR-SUPNOB-S-19	19	26.5	15	60	66.5	0.34	50
TR-SUPNOB-S-25	25	33.5	15	60	87.5	0.50	50

## INDUSTRIAL HOSES - air and water



### NOBELAIR AS / R

**Internal layer:** Black, antistatic PVC  
**Reinforcement:** Polyester braid  
**External layer:** Dull blue PVC  
**Working temp.:** From -20°C up to +60°C

Highly flexible hose designed for compressed air. Due to such qualities as: lightweight, flexibility in low temperatures and resistance to elongation it is used for pneumatic tools, compressors, hose reels, etc. Manufactured according to EN 14593, EN 14594 standards.

Antistatic ( $R < 10^6 \Omega$ ), resistant to high ambient temperature and adjusted to decontamination process (essential when used in breathing apparatus).

code	I.D. [mm]	O.D. [mm]	working press. 20°C [bar]	bursting press. 20°C [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TR-NOB-ASR-06	6	12	15	60	20	0.11	50
TR-NOB-ASR-08	8	14	15	60	25	0.13	50
TR-NOB-ASR-10	10	16	15	60	32.5	0.15	50
TR-NOB-ASR-13	12.7	19	15	60	40	0.19	50
TR-NOB-ASR-19	19	28	15	60	60	0.40	50



### AIR 20

**Internal layer:** Black EPDM rubber  
**Reinforcement:** Synthetic braid  
**External layer:** Black EPDM rubber  
**Working temp.:** From -20°C up to +70°C

Flexible hose designed for air (oiled air as well), non-aggressive liquids or other industrial applications. Resistant to abrasion, ageing, ozone and weather conditions.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-AIR20-06	6	14	20	60	60	0.15	100
IV-AIR20-07	7	16	20	60	60	0.20	100
IV-AIR20-08	8	17	20	60	65	0.21	100
IV-AIR20-10	10	19	20	60	80	0.25	100
IV-AIR20-13	13	23	20	60	105	0.35	60
IV-AIR20-16	16	26	20	60	130	0.40	60
IV-AIR20-19	19	30	20	60	150	0.52	60

## INDUSTRIAL HOSES - air and water



### MONTANA 20®

**Internal layer:** Black SBR rubber  
**Reinforcement:** Synthetic braid  
**External layer:** Black EPDM rubber  
**Working temp.:** From -30 °C up to +70°C

Robust, delivery hose for air and water used for heavy-duty applications. Internal layer resistant to oil mist. It is resistant to abrasion and weather conditions.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-MONTANA20-010	10	19	20	60	0.29	120
IV-MONTANA20-013	13	23	20	60	0.38	120
IV-MONTANA20-016	16	26	20	60	0.42	120
IV-MONTANA20-019	19	30	20	60	0.59	120
IV-MONTANA20-025	25	35	20	60	0.61	120
IV-MONTANA20-032	32	44	20	60	0.95	120
IV-MONTANA20-038	38	51	20	60	1.18	120
IV-MONTANA20-040	40	54	20	60	1.28	120
IV-MONTANA20-051	51	69	20	60	2.26	120
IV-MONTANA20-063	63.5	81.5	20	60	2.69	120
IV-MONTANA20-076	76	94.5	20	60	3.17	120
IV-MONTANA20-090	90	110	20	60	3.99	120
IV-MONTANA20-102	102	122	20	60	4.42	120



### ALASKA®

**Internal layer:** Black SBR rubber  
**Reinforcement:** Double steel braid  
**External layer:** Yellow EPDM rubber  
**Working temp.:** From -30°C up to +70°C

Robust and resistant to the most severe working conditions in mining, quarries, construction industry, etc. Designed for air applications.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-ALASKA-013	13	25.5	70	210	0.57	120
IV-ALASKA-019	19	31.5	50	150	0.75	120
IV-ALASKA-025	25	37.5	45	135	0.93	120
IV-ALASKA-032	32	48	45	135	1.57	120
IV-ALASKA-038	38	55	45	135	1.93	120
IV-ALASKA-051	51	68	40	120	2.38	120
IV-ALASKA-063	63.5	80	35	105	2.84	120
IV-ALASKA-076	76	96.5	35	105	4.60	120
IV-ALASKA-102	102	127	30	90	7.17	60

## INDUSTRIAL HOSES - air and water



### SAHARA BD®

**Internal layer:** White EPR rubber  
**Reinforcement:** Synthetic braid  
**External layer:** Blue EPDM rubber  
**Working temp.:** From -40°C up to +220°C  
 (with peaks up to +240°C)

Flexible, kink resistant hose designed for hot air transfer in industrial installations as well as in cement, feed and tank trucks, etc. External layer resistant to abrasion, ozone and weather conditions.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	standard length [m]
IV-SAHARA-BD-025	25	41	10	30	120
IV-SAHARA-BD-032	32	48	10	30	120
IV-SAHARA-BD-038	38	54	10	30	120
IV-SAHARA-BD-040	40	56	10	30	120
IV-SAHARA-BD-051	51	69	10	30	120
IV-SAHARA-BD-060	60	78	10	30	120
IV-SAHARA-BD-063	63.5	82	10	30	120
IV-SAHARA-BD-076	76	94	10	30	120
IV-SAHARA-BD-090	90	108	10	30	120
IV-SAHARA-BD-102	102	125	10	30	120



### SAHARA / LL BD®

**Internal layer:** White EPR rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Blue EPDM rubber  
**Working temp.:** From -40°C up to +220°C  
 (with peaks up to +240°C)

Flexible, kink resistant hose designed for hot air transfer in industrial installations as well as in cement, feed and tank trucks, etc. External layer resistant to abrasion, ozone and weather conditions.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	standard length [m]
IV-SAHARA-LL-BD-025	25	37	10	30	120
IV-SAHARA-LL-BD-032	32	44	10	30	120
IV-SAHARA-LL-BD-038	38	50	10	30	120
IV-SAHARA-LL-BD-040	40	53	10	30	120
IV-SAHARA-LL-BD-051	51	64	10	30	120
IV-SAHARA-LL-BD-060	60	74	10	30	120
IV-SAHARA-LL-BD-063	63.5	77.5	10	30	120
IV-SAHARA-LL-BD-076	76	91	10	30	120
IV-SAHARA-LL-BD-090	90	105.5	10	30	120
IV-SAHARA-LL-BD-102	102	117.5	10	30	120

## INDUSTRIAL HOSES - air and water



### BREATHING HOSE

**Internal layer:** Black EPDM rubber  
**Reinforcement:** Aramid braid  
**External layer:** Black EPDM rubber  
**Working temp.:** From -40°C up to +120°C

Very flexible delivery hose designed to convey compressed air or fresh air for breathing. Widely used in breathing masks and compressed air supply lines. Electrical conductivity of external and internal layer at  $10^3 < R < 10^8 \Omega/m$  level. Extremely durable and reliable due to its high resistance to temperature and abrasion. Meets the requirements of EN14593/14594 standard.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TR-5501735	7.2	14.2	10	80	100	0.17	80
TR-5501738	9.5	17.5	10	80	125	0.24	80



### HILCOFLEX SPEZIAL 90

**Material:** Yellow NBR/PVC compound totally embedded in polyester/polyamide braid during hose extrusion process  
**Working temp.:** From -20°C up to +100°C

Robust, delivery hose designed to transfer water or compressed air in irrigation systems, agriculture, mining, construction sites, etc. The colour (yellow) ensures perfect visibility. Excellent resistance to abrasion, ozone, weather conditions, oil, fuel and a wide range of chemicals. More flexible and lightweight compared to standard rubber hoses. Easy handling and storage due to layflat construction. Does not require cleaning nor drying. For pneumatic hammers and air-drills there is DN20 or DN25 option available, both 20 m long with increased DIN 8537/20 033 couplings, ensuring minimum pressure loss.

code	I.D. [mm]	wall thickness [mm]	working pressure [bar]		bursting pressure [bar]	weight [kg/m]	standard length [m]
			water	air			
GH-HFLEX-S90-020	20	2.3	30	22	90	0.19	100
GH-HFLEX-S90-026	26	2.5	30	22	90	0.23	100
GH-HFLEX-S90-038	38	3.3	30	22	90	0.40	100
GH-HFLEX-S90-052	52	3.3	30	22	90	0.60	100
HILCOFLEX SPEZIAL 90 assembly							
GH-HFLEX-S90-020-20	20	2.3	30	22	90	0.19	20
GH-HFLEX-S90-026-20	26	2.5	30	22	90	0.23	20

## INDUSTRIAL HOSES - air and water



### HIFLAT LD

**Internal layer:** Black PVC  
**Reinforcement:** Polyester braid  
**External layer:** Blue PVC  
**Working temp.:** From -10°C up to +50°C

Very lightweight, lay flat, delivery hose designed for water transfer. Widely used in agriculture, mining, shipbuilding, etc.

code	I.D. [mm]	working pressure 20°C [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
FT-HIFLAT-LD-025	25	6	18	0.18	50
FT-HIFLAT-LD-032	32	6	18	0.19	50
FT-HIFLAT-LD-035	35	6	18	0.21	50
FT-HIFLAT-LD-038	38	5	15	0.23	50
FT-HIFLAT-LD-040	40	5	15	0.24	50
FT-HIFLAT-LD-045	45	5	15	0.27	50
FT-HIFLAT-LD-051	51	4	12	0.28	50
FT-HIFLAT-LD-060	60	4	12	0.35	50
FT-HIFLAT-LD-063	63	4	12	0.37	50
FT-HIFLAT-LD-070	70	4	12	0.42	50
FT-HIFLAT-LD-076	76	4	12	0.46	50
FT-HIFLAT-LD-090	90	4	12	0.58	50
FT-HIFLAT-LD-102	102	4	12	0.61	50
FT-HIFLAT-LD-127	127	3	9	0.95	50
FT-HIFLAT-LD-153	153	2.5	7.5	1.20	50
FT-HIFLAT-LD-203	203	2	6	1.94	50



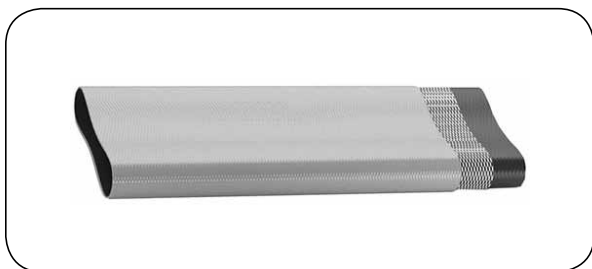
### FIRE CHICAGO®

**Internal layer:** Black EPDM rubber  
**Reinforcement:** Synthetic braid  
**External layer:** Black EPDM rubber  
**Working temp.:** From -40°C up to +70°C

Robust, flexible hose designed for water delivery. Suitable for hose reels. Intended for high pressure fire extinguishing equipment, on fire trucks. Internal layer is resistant to fire retardants and foam. External layer is resistant to abrasion and weather conditions. Options compliant with: EN 1947, ASTM, BS 3169 or one with luminescent external layer are available.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-CHICAGO-19	19	32	40	120	0.59	120
IV-CHICAGO-25	25	38	40	120	0.72	120
IV-CHICAGO-28	28	44	40	120	1.01	120
IV-CHICAGO-32	32	45	40	120	0.88	120
IV-CHICAGO-38	38	52	40	120	1.06	120

## INDUSTRIAL HOSES - air and water



### HIFLAT HD

**Internal layer:** Black PVC  
**Reinforcement:** Polyester braid  
**External layer:** Blue PVC  
**Working temp.:** From -10°C up to +60°C

Very lightweight, lay flat, delivery hose designed for water transfer. Widely used in agriculture, mining, shipbuilding, etc.

code	I.D. [mm]	working pressure 20°C [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
FT-HIFLAT-HD-025	25	10	30	0.17	50
FT-HIFLAT-HD-032	32	9	27	0.21	50
FT-HIFLAT-HD-035	35	8	24	0.24	50
FT-HIFLAT-HD-038	38	8	24	0.25	50
FT-HIFLAT-HD-040	40	8	24	0.27	50
FT-HIFLAT-HD-045	45	8	24	0.29	50
FT-HIFLAT-HD-051	51	8	24	0.34	50
FT-HIFLAT-HD-060	60	8	24	0.43	50
FT-HIFLAT-HD-063	63	8	24	0.45	50
FT-HIFLAT-HD-070	70	7	21	0.49	50
FT-HIFLAT-HD-076	76	7	21	0.53	50
FT-HIFLAT-HD-080	80	7	21	0.56	50
FT-HIFLAT-HD-090	90	7	21	0.66	50
FT-HIFLAT-HD-102	102	7	21	0.75	50
FT-HIFLAT-HD-127	127	6	18	1.11	50
FT-HIFLAT-HD-153	153	4	12	1.42	50
FT-HIFLAT-HD-203	203	2.5	7.5	2.10	50



### ANKARA®

**Internal layer:** Black NR/SBR rubber  
**Reinforcement:** Synthetic braid  
**External layer:** Black SBR rubber  
**Working temp.:** From -40°C up to +70°C

Robust, flexible hose adjusted to be used on hose reels. It is used for high pressure fire extinguishing equipment. Electrically conductive internal layer is resistant to fire extinguishing powders and foams. External layer resistant to abrasion and weather conditions.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-ANKARA-25	25	37	20	60	0.67	120
IV-ANKARA-32	32	46	20	60	0.90	120

## INDUSTRIAL HOSES - air and water



### JAMAICA L

**Internal layer:** Black PVC  
**Reinforcement:** Polyester braid  
**External layer:** Blue PVC  
**Working temp.:** From -10°C up to +60°C

Very lightweight, lay flat, delivery hose designed for water transfer. Widely used in agriculture, mining, shipbuilding, etc.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
ME-JAMAICA-L-020	20	23	8.5	25.5	0.13	50/100
ME-JAMAICA-L-025	25	28	8.5	25.5	0.15	50/100
ME-JAMAICA-L-032	32	35	8.5	25.5	0.21	50/100
ME-JAMAICA-L-035	35	38	8.5	25.5	0.22	50/100
ME-JAMAICA-L-038	38	41	8.5	25.5	0.24	50/100
ME-JAMAICA-L-040	40	43	8.5	25.5	0.25	50/100
ME-JAMAICA-L-045	45	48	6.5	19.5	0.28	50/100
ME-JAMAICA-L-051	51	54	6.5	19.5	0.32	50/100
ME-JAMAICA-L-063	63	67.5	6.5	19.5	0.42	50/100
ME-JAMAICA-L-070	70	74	5.5	16.5	0.45	50/100
ME-JAMAICA-L-076	76	80	5.5	16.5	0.52	50/100
ME-JAMAICA-L-080	80	84	5.5	16.5	0.58	50/100
ME-JAMAICA-L-090	90	94	5.5	16.5	0.66	50/100
ME-JAMAICA-L-102	102	106	5.5	16.5	0.72	50/100
ME-JAMAICA-L-110	110	115	5.5	16.5	0.78	50/100
ME-JAMAICA-L-127	127	132	3	9	1.13	50/100
ME-JAMAICA-L-152	152	157	3	9	1.35	50/100
ME-JAMAICA-L-204	204	209	2.5	7	2.00	50



### SNOWBLAST

**Internal layer:** EPDM rubber  
**Reinforcement:** Polyester braid  
**External layer:** Special yellow coating  
 resistant to abrasion  
**Working temp.:** From -40°C up to +100°C

Special high pressure hose designed for snow guns, resistant to abrasion, UV radiation, weather conditions and ozone. The colour (yellow) of the external layer ensures perfect visibility even on snow. Delivered as complete hose assemblies with CAMLOCK C and E couplings made of AISI 316, maximum working pressure 60 bar.

code	I.D. [mm]	wall thickness [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	length [m]
GH-SNOWBLAST-52-10	52	4	60	150	0.7	10
GH-SNOWBLAST-52-20	52	4	60	150	0.7	20



## INDUSTRIAL HOSES - air and water



### HILCOFLEX

**Material:** Black NBR/PVC compound totally embedded in polyester/polyamide braid during hose extrusion process

**Working temp.:** From -20°C up to +100°C

Robust, delivery hose designed to transfer water or compressed air in irrigation systems, agriculture, mining, construction sites, etc. Resistant to abrasion, ozone, weather conditions, oil, fuel and a wide range of chemicals. More flexible and lightweight compared to standard rubber hoses. Easy handling and storage since the hose is a layflat type. Does not require cleaning nor drying. Lengths up to 200 m available from 76 mm diameter.

code	I.D. [mm]	wall thickness [mm]	working pressure [bar]		bursting pressure [bar]	weight [kg/m]	standard length [m]
			water	air			
GH-HFLEX-020	20	2	25	18	75	0.16	100
GH-HFLEX-026	26	2	25	18	75	0.18	100
GH-HFLEX-032	32	2	20	15	60	0.23	100
GH-HFLEX-035	35	2	16	12	50	0.25	100
GH-HFLEX-038	38	2	16	12	50	0.28	100
GH-HFLEX-045	45	2.2	16	12	50	0.35	100
GH-HFLEX-052	52	2.2	16	12	50	0.40	100
GH-HFLEX-055	55	2.2	16	12	50	0.44	100
GH-HFLEX-060	60	2.2	16	12	50	0.47	100
GH-HFLEX-065	65	2.2	16	12	50	0.51	100
GH-HFLEX-070	70	2.3	16	12	50	0.60	100
GH-HFLEX-076	76	2.5	16	12	50	0.68	100
GH-HFLEX-080	80	2.5	16	12	50	0.75	100
GH-HFLEX-090	90	2.8	16	12	50	0.90	100
GH-HFLEX-102	102	2.8	16	12	50	1.00	100
GH-HFLEX-110	110	3	16	12	50	1.10	100
GH-HFLEX-120	120	3	15	11	45	1.30	100
GH-HFLEX-127	127	3	15	11	45	1.40	100
GH-HFLEX-152	152	3	14	10	42	1.70	100
GH-HFLEX-203	203	3.3	14	10	42	2.40	100



### INDUSTRIAL / SR

**Internal layer:** Smooth synthetic rubber

**Reinforcement:** Polyester braid with polyester helix wire

**Working temp.:** From -40°C up to +70°C

Very lightweight, flexible hose designed for fire protection in buildings, transfer of air, dust or light solid particles. Manufactured according to EN 694 specifications.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	standard length [m]
BZ-INDUSTRIAL-SR-19	19	23	12	42	60
BZ-INDUSTRIAL-SR-25	25	29	12	42	60
BZ-INDUSTRIAL-SR-33	33	37	7	24.5	30

## INDUSTRIAL HOSES - air and water



### FIRE UNIVERSAL

**Internal layer:** PVC inner lining  
**Reinforcement:** Polyester braid  
**Working temp.:** From -30°C up to +50°C

Very lightweight, flexible hose designed for fire protection in buildings, fire hydrants and other equipment used by firefighters. Widely used in all branches of civil engineering. Manufactured according to EN 14540 specifications. Holds approval certificates issued Polish Scientific and Research Centre for Fire Protection (for complete hose assemblies).

code	I.D. [mm]	working pressure [bar]	bursting pressure [bar]	lug distance [mm]	standard length [m]
hose assembly with STORZ couplings					
BZ-FIRE-U-025-15	25	15	45	D-31	15
BZ-FIRE-U-025-20	25	15	45	D-31	20
BZ-FIRE-U-052-15	52	15	45	C-66	15
BZ-FIRE-U-052-20	52	15	45	C-66	20
BZ-FIRE-U-075-20	75	15	45	B-89	20
BZ-FIRE-U-110-20	110	12	36	A-133	20
hose					
BZ-FIRE-U-025	25	15	45	-	40
BZ-FIRE-U-052	52	15	45	-	40
BZ-FIRE-U-075	75	15	45	-	40
BZ-FIRE-U-110	110	12	36	-	10



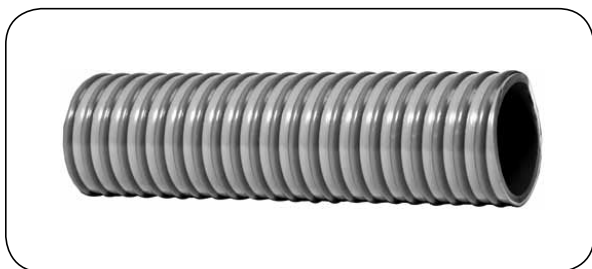
### FIRE UNIVERSAL / PU

**Internal layer:** Smooth polyurethane  
**Reinforcement:** Polyester braid  
**External layer:** Red polyurethane coating  
**Working temp.:** From -40°C up to +70°C

Very lightweight, flexible hose designed for fire protection in buildings, fire pumps, water pumps and other equipment used by firefighters. Widely used in all branches of civil engineering. Polyurethane external layer is dirt repellent and increases resistance to wear and abrasion. Holds approval certificates issued by Polish Scientific and Research Centre for Fire Protection (for complete hose assemblies).

code	I.D. [mm]	working pressure [bar]	bursting pressure [bar]	lug distance [mm]	standard length [m]
hose assembly with STORZ couplings					
BZ-FIRE-U-PU-052-20	52	15	45	C-66	20
BZ-FIRE-U-PU-075-20	75	15	45	B-89	20
BZ-FIRE-U-PU-110-20	110	12	36	A-133	20
hose					
BZ-FIRE-U-PU-052	52	15	45	-	40
BZ-FIRE-U-PU-075	75	15	45	-	40
BZ-FIRE-U-PU-110	110	12	36	-	40

## INDUSTRIAL HOSES - air and water

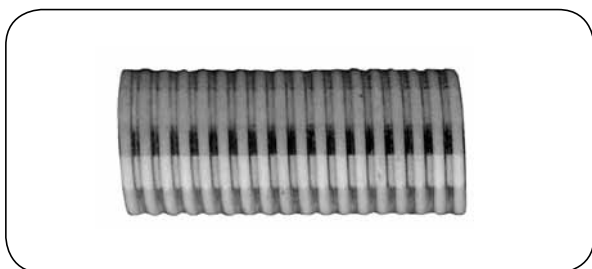


### MULTIFLEX

**Material:** PVC  
**Reinforcement:** Rigid PVC wire helix  
**Working temp.:** From -20°C up to +50°C

Flexible hose intended for water and sewage. Used in industrial applications. Due to high resistance to low temperature it is widely used to empty septic tanks.

code	I.D. [mm]	working pressure 20°C [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
FT-MULTIFLEX-025	25	8	0.9	90	0.48	50
FT-MULTIFLEX-032	32	7	0.9	120	0.57	50
FT-MULTIFLEX-038	38	6	0.9	140	0.67	50
FT-MULTIFLEX-040	40	6	0.9	150	0.76	50
FT-MULTIFLEX-051	51	5	0.9	190	1.05	50
FT-MULTIFLEX-063	63	5	0.9	230	1.32	50
FT-MULTIFLEX-070	70	4	0.9	260	1.43	50
FT-MULTIFLEX-076	76	4	0.9	280	1.62	50
FT-MULTIFLEX-080	80	4	0.9	290	1.85	30
FT-MULTIFLEX-090	90	4	0.9	330	2.14	30
FT-MULTIFLEX-102	102	4	0.9	370	2.57	30
FT-MULTIFLEX-110	110	3	0.9	440	3.45	30
FT-MULTIFLEX-127	127	3	0.9	460	3.71	20
FT-MULTIFLEX-152	152	3	0.9	550	4.99	20



### GREEN

**Material:** PVC  
**Reinforcement:** Rigid PVC wire helix  
**Working temp.:** From -25°C up to +55°C

Flexible hose designed for water and sewage. Used in industrial applications. Due to high resistance to low temperature it is widely used to empty septic tanks. Version with antistatic wire is available on request.

code	I.D. [mm]	O.D. [mm]	working press. 20°C [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
ME-GREEN-051	51	62	4.5	0.9	200	0.96	30
ME-GREEN-063	63.5	75.5	4	0.9	250	1.30	30
ME-GREEN-076	76	89	3.5	0.9	300	1.70	30
ME-GREEN-080	80	93	3.5	0.9	320	1.75	30
ME-GREEN-102	102	116	3	0.9	400	2.60	30
ME-GREEN-110	110	125	2.7	0.9	440	3.00	30
ME-GREEN-127	127	144	2.3	0.9	500	3.60	20/30
ME-GREEN-152	152	170	1.8	0.9	600	4.70	20/30

## INDUSTRIAL HOSES - air and water



### ARIZONA SUPERELASTIC

**Material:** PVC  
**Reinforcement:** Rigid PVC helix wire  
**Working temp.:** From -25°C up to +55°C

Flexible hose designed for water and sewage. Widely used to empty septic tanks, in irrigation systems, to transfer water in industrial systems, etc. Remains very flexible at low temperature. Available as an AS antistatic type with antistatic wire or ARIZONA EXTREME ELASTIC that remains flexible even at very low temperature (up to -40°C).

code	I.D. [mm]	O.D. [mm]	working press. 20°C [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
standard version							
ME-ARIZONA-SE-025	25	33.8	7	0.9	100	0.50	50
ME-ARIZONA-SE-032	32	40.8	6	0.9	130	0.60	50
ME-ARIZONA-SE-038	38	47	6	0.9	150	0.70	50
ME-ARIZONA-SE-045	45	55	5.5	0.9	180	0.90	50
ME-ARIZONA-SE-050	50	61	5	0.9	200	1.05	50
ME-ARIZONA-SE-060	60	71.2	4.5	0.9	240	1.25	50
ME-ARIZONA-SE-063	63	75.5	4.5	0.9	250	1.39	50
ME-ARIZONA-SE-075	75	88	4	0.9	300	1.70	30
ME-ARIZONA-SE-076	76	88.8	4	0.9	300	1.70	30
ME-ARIZONA-SE-080	80	92.6	3.5	0.9	320	1.85	30
ME-ARIZONA-SE-090	90	103.7	3.5	0.9	360	2.25	30
ME-ARIZONA-SE-100	100	114.8	3	0.9	400	2.70	30
ME-ARIZONA-SE-102	102	116.4	3	0.9	400	2.70	30
ME-ARIZONA-SE-110	110	125.5	3	0.9	440	3.10	20
ME-ARIZONA-SE-120	120	136	2.5	0.9	480	3.60	20
ME-ARIZONA-SE-125	125	142.1	2.5	0.9	500	3.90	20
ME-ARIZONA-SE-127	127	143.6	2.5	0.9	510	3.90	20
ME-ARIZONA-SE-130	130	147	2.5	0.9	520	4.10	20
ME-ARIZONA-SE-133	133	150	2.5	0.9	550	4.20	20
ME-ARIZONA-SE-150	150	168	2	0.9	600	5.00	20
ME-ARIZONA-SE-152	152	170.4	2	0.9	610	5.00	20
ME-ARIZONA-SE-160	160	178.8	2	0.9	640	5.60	20
ME-ARIZONA-SE-200	200	226	1.5	0.9	800	10.00	-
antistatic version							
ME-ARIZONA-S-AS-076	76	88.8	4	0.9	300	1.71	30
ME-ARIZONA-S-AS-102	102	116.4	3	0.9	400	2.72	30
ME-ARIZONA-S-AS-127	127	143.6	2.5	0.9	510	3.92	20
ME-ARIZONA-S-AS-152	152	170.4	2	0.9	610	5.03	20

## INDUSTRIAL HOSES - air and water



### GENESIS ToiVac

**Material:** Polyethylene  
**Reinforcement:** Polyethylene profile  
**Working temp.:** From -40°C up to +60°C

Flexible hose designed for water and sewage. Due to high resistance to low temperature it is widely used as an emptying hose for septic tanks, portable restrooms, toilets. Delivered in lengths listed below with welded cuffs as a standard.

code	I.D. [mm]	vacuum [bar]	bending radius [mm]	weight [kg/pcs]	length [m]
SC-GENESIS-TV-051-10	51	0.95	85	11.00	10
SC-GENESIS-TV-051-15				16.50	15
SC-GENESIS-TV-051-20				22.00	20
SC-GENESIS-TV-063-10	63	0.95	105	12.50	10
SC-GENESIS-TV-063-15				18.80	15
SC-GENESIS-TV-063-20				25.00	20
SC-GENESIS-TV-076-10	76	0.9	125	15.00	10
SC-GENESIS-TV-076-15				22.50	15
SC-GENESIS-TV-076-20				30.00	20
SC-GENESIS-TV-102-10	102	0.85	165	20.00	10
SC-GENESIS-TV-102-15				30.00	15
SC-GENESIS-TV-102-20				40.00	20



code	description
SC-GENESIS-TV-51K	cuff for GENESIS 51 mm
SC-GENESIS-TV-63K	cuff for GENESIS 63 mm
SC-GENESIS-TV-76K	cuff for GENESIS 76 mm



### HI-VAC

**Internal layer:** Polyethylene  
**Reinforcement:** Rigid helix wire  
**External layer:** Polyethylene  
**Working temp.:** From -45°C up to +65°C

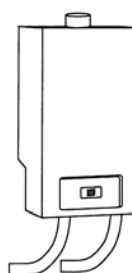
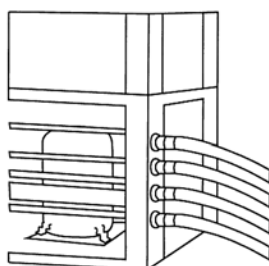
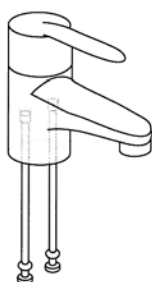
Flexible hose designed for water and sewage. Due to high resistance to low temperature it is widely used as an emptying hose for septic tanks, portable restrooms, toilets. Delivered in lengths listed below with welded cuffs as a standard.

code	I.D. [mm]	O.D. [mm]	bursting pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/pcs]	length [m]
PR-HIVAC-51-03	51	70	4	0.98	125	3.80	3
PR-HIVAC-51-09						11.60	9.15
PR-HIVAC-51-12						15.50	12.2
PR-HIVAC-51-15						19.30	15.2
PR-HIVAC-51-18						23.30	18.3

## INDUSTRIAL HOSES - air and water

### Sanitary hoses and hose assemblies

Sanitary hoses and hose assemblies are suitable for hot and cold water installations. They are used for direct connection of sanitary bathroom fittings and kitchen fittings but also air-conditioning and central heating installations. Come either without fittings, in inner diameters ranging from 10 mm to 50 mm, or as complete hose assemblies with threaded fittings (3/8", 1/2" and 3/4") and inner diameters of 8 mm and 12 mm. Hoses with other types of connectors (female thread angular connectors, M10 faucet connectors, compression fittings) and of other lengths (from 100 mm to 2500 mm) are available on request. The hose assemblies obtained a technical approval by ITB (ITB - Building Research Institute) and hygiene approval.



### ZINCOFLEX - C

**Internal layer:** Non-toxic EPDM rubber

**Reinforcement:** Galvanized steel braid

**Working temp.:** From -10°C up to +100°C

Hose designed for water and non-corrosive fluids. Widely used in sanitary systems, boilers and cooling systems. Two red stripes in the braid of the hose indicate the resistance to high fluid temperature.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	standard length [m]
RK-ZCF-C-10	10	13.2	15	60	40	50
RK-ZCF-C-13	13	18	15	60	60	50
RK-ZCF-C-19	19	25	10	40	80	50
RK-ZCF-C-25	25	32	10	40	100	50
RK-ZCF-C-32	32	41	10	40	160	50
RK-ZCF-C-40	40	51	6	24	180	50
RK-ZCF-C-50	50	62	6	24	230	50

# INDUSTRIAL HOSES - air and water

## Sanitary hoses and hose assemblies



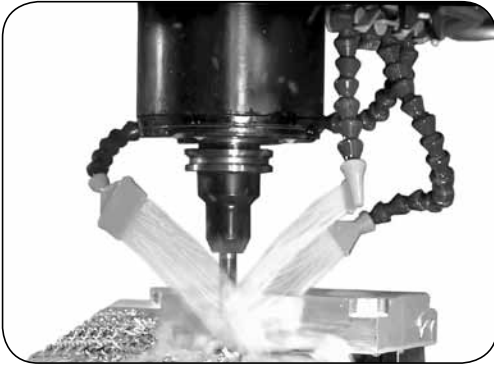
### WS - ST WS - GI

**Internal layer:** Black EPDM rubber  
(with increased parameters)  
**Reinforcement:** External AISI 304 braid  
**Working press:** Up to 16 bar  
**Working temp.:** Up to +110°C

Flexible hose with connectors intended for water sanitary installations (hot and cold water). Extensively used to connect industrial installations, central heating systems and air-conditioning systems. Resistant to glycol at the max. concentration of 35%. The connectors are made of brass, ferrules of stainless steel (AISI 304). The hose obtained hygiene approval and technical approval for application in the building industry.

code	I.D. [mm]	O.D. [mm]	thread 1 [inch]	thread 2 [inch]	flow max. * [l/min.]	length [mm]		
VO-ST-06DP-06DP-020	8	13	GW 3/8	GW 3/8	29	200		
VO-ST-06DP-06DP-030						300		
VO-ST-06DP-06DP-040						400		
VO-ST-06DP-06DP-060						600		
VO-ST-06DP-06DP-080						800		
VO-ST-06DP-06DP-100						1000		
VO-ST-08DP-08DP-020			12	20		GW 1/2	GW 1/2	200
VO-ST-08DP-08DP-040								400
VO-ST-08DP-08DP-050								500
VO-ST-08DP-08DP-060								600
VO-ST-08DP-08DP-070								700
VO-ST-08DP-08DP-080								800
VO-ST-08DP-08DP-100								1000
VO-ST-08DP-08DP-120								1200
VO-GI-08DP-08DP-030	65	300						
VO-GI-08DP-08DP-040		400						
VO-GI-08DP-08DP-050		500						
VO-GI-08DP-08DP-060		600						
VO-GI-08DP-08DP-080		800						
VO-GI-08DP-08DP-100		1000						
VO-GI-08DP-08DP-120		1200						
VO-GI-08DP-08MP-030		GZ 1/2	300					
VO-GI-08DP-08MP-040			400					
VO-GI-08DP-08MP-050			500					
VO-GI-08DP-08MP-060			600					
VO-GI-08DP-08MP-080			800					
VO-GI-12DP-12DP-030	GW 3/4		300					
VO-GI-12DP-12DP-040		400						
VO-GI-12DP-12DP-050		500						
VO-GI-12DP-12DP-060		600						
VO-GI-12DP-12DP-080		800						
VO-GI-12DP-12DP-120		1200						
VO-GI-12DP-12MP-030		GZ 3/4	300					
VO-GI-12DP-12MP-040			400					
VO-GI-12DP-12MP-050			500					
VO-GI-12DP-12MP-060			600					

## INDUSTRIAL HOSES - air and water



### LOC-LINE® coolant hose system

**Material:** Acetal (POM)

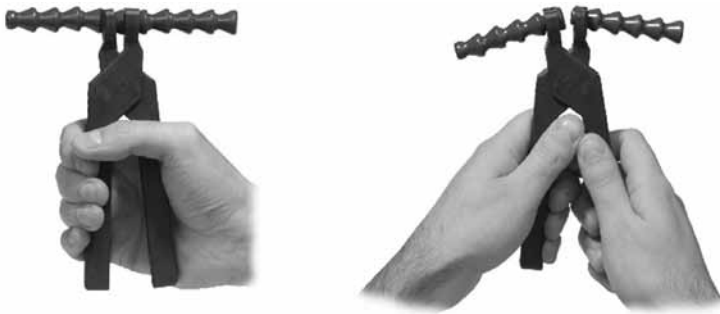
**Working temp.:** Up to +76°C

**Melting temp.:** +165°C

Modular hose assembly system designed for low pressure transfer of air, water, oils and other coolants used in metalworking processes. Made of acetal which is resistant to corrosion, solvents, oils or lubricants. The hose assemblies are both rigid and flexible. With the unique construction and the way the segments are attached, it is really easy to direct the jet of coolant, adjust length, change the arrangement by adding or detaching particular segments (connect and disconnect using special pliers or manually). Highly resistant to abrasion, vibrations. The hose stays securely in any position and does not cause any damage to cutting blades. Wide range of accessories allows adapting the system for various applications. Available in three sizes (flow diameter 1/4", 1/2" and 3/4").

**Chemical resistance table**

substance	yes	no
ethyl alcohol	X	
acetone	X	
petrol	X	
lubricants	X	
solvents	X	
oils	X	
brake fluids	X	
acids		X
bases		X
ammonium hydroxide		X



### Hose assembly with a nozzle and a valve












system	code	I.D. [inch]	length [mm]	thread [inch]	nozzle diam. [inch]	max. press [bar]	flow max. [l/hour]
1/4"	LL-P0413Z	1/4	400	1/4 NPT male	1/4	3	1136
	LL-P0513Z	1/4	500	1/4 NPT male	1/4	3	1136
	LL-P0613Z	1/4	600	1/4 NPT male	1/4	3	1136
1/2"	LL-P1412Z	1/2	400	1/2 NPT male	1/2	2	2173
	LL-P1512Z	1/2	500	1/2 NPT male	1/2	2	2173
	LL-P1612Z	1/2	600	1/2 NPT male	1/2	2	2173
3/4"	LL-P2402Z	3/4	400	3/4 NPT male	3/4	1.4	5182
	LL-P2501Z	3/4	500	3/4 NPT male	3/4	1.4	5182
	LL-P2601Z	3/4	600	3/4 NPT male	3/4	1.4	5182





## INDUSTRIAL HOSES - air and water

### LOC-LINE® coolant hose system - mounting elements

picture	description	code		
		system 1/4"	system 1/2"	system 3/4"
	Hose	LL-41401 (L = 2x145 mm)	LL-51801 (L = 2x140 mm)	LL-61501 (L = 2x145 mm)
	Coil	LL-49421 (L = 15.20 m)	LL-59861 (L = 15.20 m)	LL-69541 (L = 15.20 m)
	Extension	LL-49445 (L = 90 mm)	LL-59883 (L = 89.5 mm)	-
	Mounting clamp	LL-49446	LL-59884	-
	Round nozzle	LL-49422 (1/16") LL-49423 (1/8") LL-49424 (1/4")	LL-59866 (1/4") LL-59862 (3/8") LL-59863 (1/2")	LL-69543 (5/8") LL-69542 (3/4")
	90° round nozzle	LL-49439 (1/16") LL-49440 (1/8") LL-49441 (1/4")	LL-59878 (1/4") LL-59879 (3/8") LL-59880 (1/2")	-
	Side flow nozzle	LL-49443	LL-59889	-
	90° spray bar nozzle	LL-49442 (6 holes 2.5 mm)	LL-59881 (8 holes 4.4 mm)	-
	Flat nozzle - slot	LL-49451 (11.2x1 mm)  LL-49452 (11.2x1.5 mm)	LL-59890 (17.8x2 mm)  LL-59891 (3.2 mm)	-
	Flat nozzle - holes	LL-49453 (5 holes 1.5 mm)  LL-49454 (7 holes 1 mm)	LL-59892 (5 holes 3.2 mm)  LL-59893 (7 holes 2 mm)	-
	Flare nozzle	LL-49427 (24x1.5 mm)	LL-59867 (32x4.2 mm)  LL-59871 (62x2.8 mm)	LL-69547 (76x4.7 mm)



## INDUSTRIAL HOSES - air and water

### LOC-LINE® coolant hose system - mounting elements

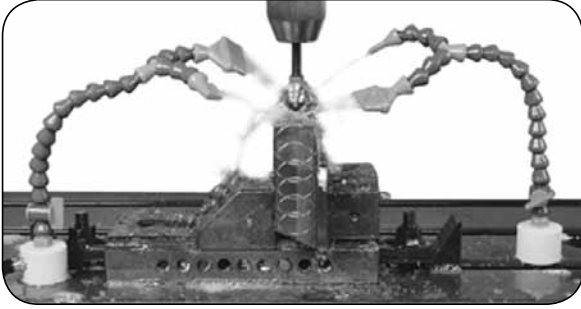
picture	description	code		
		system 1/4"	system 1/2"	system 3/4"
	Flat nozzle with adjustable spray bar head	LL-49449 (16 holes 1 mm)  LL-49450 (16 holes 1.5 mm)  LL-49455 (20 otw. 1.9 mm)	LL-59895 (20 holes 1.9 mm)	-
	Male thread connector	LL-49425 (1/8" NPT)  LL-49426 (1/4" NPT)  LL-49437 (1/8" BSPT)  LL-49438 (1/4" BSPT)	LL-59864 (3/8" NPT)  LL-59865 (1/2" NPT)  LL-59876 (3/8" BSPT)  LL-59877 (1/2" BSPT)	LL-69545 (3/4" NPT)  LL-69549 (3/4" BSPT)
	Double socket	LL-49429	LL-59872	LL-69554
	Y fitting	LL-49428	LL-59868	LL-69552
	Y reducer	-	LL-59870 (1/2" / 2x1/4")	LL-86069 (3/4" / 2x1/2")
	Reducer	-	LL-59869 (1/2" x 1/4")	LL-69548 (3/4" x 1/2")
	Elbow	LL-49435	LL-59874	LL-69551
	T fitting used to make a manifold	LL-49436	LL-59875	-
	End cap	LL-49447	LL-59885	-

## INDUSTRIAL HOSES - air and water

### LOC-LINE® coolant hose system - mounting elements

picture	description	code		
		system 1/4"	system 1/2"	system 3/4"
	In-line valve	LL-29454	LL-39854	LL-69558
	NPT male thread valve	LL-29452	LL-39852	LL-69556
	NPT female thread valve	LL-29453	LL-39853	LL-69557
	In-line check valve	LL-29451	LL-39851	-
	Manifold system	LL-21199	LL-32099	-
	Manifold system with flow control	LL-21198	LL-32098	-
	Manifold system bracket	LL-21195	LL-32095	-
	Assembly pliers	LL-78001	LL-78002	LL-78004
	Magnetic base with 1/4" hose tail	LL-40400	-	-

## INDUSTRIAL HOSES - air and water



### JETON® coolant system

**Material:** Acetal (POM)

**Working temp.:** Up to +65°C

**Melting temp.:** +165°C

Modular hose assembly system designed for low pressure transfer of air, water, oils and other coolants used in metalworking processes. Made of acetal which is resistant to corrosion, solvents, oils or lubricants. The hose assemblies are both rigid and flexible. With the unique construction and the way the segments are attached, it is really easy to direct the jet of coolant, adjust length, change the arrangement by adding or detaching particular segments (connect and disconnect using special pliers or manually). Highly resistant to abrasion, vibrations. The hose stays securely in any position and does not cause any damage to cutting blades. Wide range of accessories allows adapting the system for various applications. Available in three sizes (flow diameter 1/4", 3/8", 1/2" and 3/4").

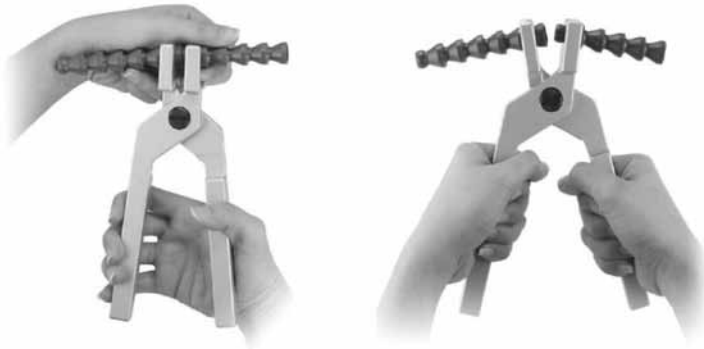
#### Correct length calculation



<b>1/4"</b>	10.2 mm (A) + 14.8 (B x number of segments) + 35.2 mm (C) = total length [mm]
<b>3/8"</b>	12.7 mm (A) + 17.3 (B x number of segments) + 39.2 mm (C) = total length [mm]
<b>1/2"</b>	14.8 mm (A) + 21.1 (B x number of segments) + 37.8 mm (C) = total length [mm]
<b>3/4"</b>	14.2 mm (A) + 23.7 (B x number of segments) + 43.0 mm (C) = total length [mm]

#### Chemical resistance table

substance	yes	no
ethyl alcohol	X	
acetone	X	
petrol	X	
lubricants	X	
solvents	X	
oils	X	
brake fluids	X	
acids		X
bases		X
ammonium hydroxide		X













#### Hose assembly with a nozzle and a valve

system	code	I.D. [inch]	length [mm]	number of segments [pcs]	thread [inch]	press [bar]	flow max. [l/hour]
1/4"	JT-62720	1/4	360	20	1/4 NPT male	2÷3	900
	JT-62721	1/4	360	20	1/4 NPT female	2÷3	900
3/8"	JT-63720	3/8	360	16	3/8 NPT male	2÷3	1500
	JT-63721	3/8	360	16	3/8 NPT female	2÷3	1500
1/2"	JT-64720	1/2	350	12	1/2 NPT male	1.4÷2	1700
	JT-64721	1/2	350	12	1/2 NPT female	1.4÷2	1700


# INDUSTRIAL HOSES - air and water

## JETON® coolant hose system - mounting elements

picture	description	code			
		system 1/4"	system 3/8"	system 1/2"	system 3/4"
	Hose	JT-82021 (L=1500 mm)  JT-82041 (L=1000 mm)	JT-83031 (L=2x145 mm)  JT-83041 (L=1000 mm)	JT-84041 (L=2x135 mm)  JT-84051 (L=1000 mm)	JT-86061 (L=2x145 mm)  JT-86071 (L=1000 mm)
	Coil	JT-82051 (L=15000 mm)  JT-8271 (L=25000 mm)	JT-83051 (L=7620 mm)  JT-83091 (L=15000 mm)	JT-84081 (L=15000 mm)  JT-84091 (L=25000 mm)	JT-86081 (L=15000 mm)  JT-86091 (L=25000 mm)
	Extension	JT-82221 (L=94.65 mm)	-	JT-84441 (L=96.30 mm)	-
	Mounting clamp	JT-82222	-	JT-84442	-
	Round nozzle	JT-82022 (1/16") JT-82023 (1/8") JT-82024 (1/4")	JT-83032 (1/4") JT-83033 (3/8") JT-83034 (1/2")	JT-84044 (1/4") JT-84042 (3/8") JT-84043 (1/2")	JT-86063 (5/8") JT-86062 (3/4")
	90° round nozzle	JT-82223 (1/16") JT-82224 (1/8") JT-82225 (1/4")	-	JT-84443 (1/4") JT-84444 (3/8") JT-84445 (1/2")	-
	Side flow nozzle	JT-62422	-	JT-64622	-
	90° spray bar nozzle	JT-82226 (6 otw. 2.3 mm)	-	JT-84446 (8 otw. 4.2 mm)	-
	Flat nozzle - slot	JT-82017 (7x1.3 mm)	-	-	-
	Flare nozzle	JT-82027 (25x1.7 mm)	JT-83037 (32.1x3.2 mm)	JT-84047 (32x4.5 mm)  JT-84050 (47.3x4.4 mm)  JT-84052 (61x3.5 mm)	JT-86067 (77.3x4.8 mm)










## INDUSTRIAL HOSES - air and water

### JETON® coolant hose system - mounting elements

picture	description	code			
		system 1/4"	system 3/8"	system 1/2"	system 3/4"
	Flat nozzle with adjustable spray bar head	JT-82228 (16 holes 1 mm)  JT-82229 (16 holes 1.5 mm)	-	JT-84447 (20 holes 1.8 mm)	-
	Male thread connector	JT-82025A (1/8" NPT)  JT-82025 (1/8" BSPT)  JT-82026A (1/4" NPT)  JT-82026 (1/4" BSPT)	JT-83035A (3/8" NPT)  JT-83035 (3/8" BSPT)  JT-83036A (1/2" NPT)  JT-83036 (1/2" BSPT)	JT-84046A (3/8" NPT)  JT-84046 (3/8" BSPT)  JT-84045A (1/2" NPT)  JT-84045 (1/2" BSPT)	JT-86064A (3/4" NPT)  JT-86064 (3/4" BSPT)
	Adapter 1/4" socket to 1/8" NPT female	JT-82012	-	-	-
	Double socket	JT-82011	JT-83011	JT-84011	JT-86011
	Y fitting	JT-82028	-	JT-84048	JT-86068
	Y reducer	-	-	JT-84049 (from 1/2" to 1/4")	JT-86051 (from 3/4" to 1/2")
	Reducer	-	-	JT-84651 (from 1/2" to 1/4")	JT-86051 (from 3/4" to 1/2")
	Elbow	JT-62420	-	JT-64620	-
	T fitting used to make a manifold	JT-62426	-	JT-64626	-
	End cap	JT-62424	-	JT-64624	-

## INDUSTRIAL HOSES - air and water

### JETON® coolant hose system - mounting elements

picture	description	code			
		system 1/4"	system 3/8"	system 1/2"	system 3/4"
	1/4" NPT male thread valve with hose tail	JT-82721	-	-	-
	In-line valve	JT-82722	-	JT-84722	-
	NPT male thread valve	JT-82723	JT-83723	JT-84723	-
	NPT female thread valve	JT-82724	JT-83724	JT-84724	-
	In-line check valve	JT-82725	-	JT-84725	-
	Manifold system	JT-52400	-	JT-54400	-
	Manifold system with flow control	JT-52410	-	JT-54410	-
	Manifold system bracket	JT-52416	-	JT-54416	-
	Assembly pliers	JT-26171	JT-26176	JT-26172	JT-26177

## INDUSTRIAL HOSES - air and water

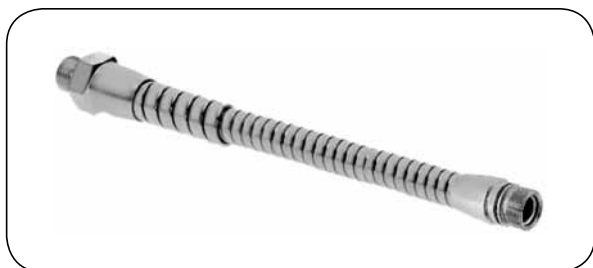


### HYDRAFIX FR 201

**Inner layer:** Black PVC  
**Reinforcement:** Steel supporting coil (additional nickel-plated steel helix protection up to DN 10)  
**Working press.:** 4 bar

Hose designed for low pressure transfer of air, water, oils and other coolants used during metalworking processes. Due to the special construction, the hose has so-called shape memory, so once bent, it remains in that position. Therefore, it is easy to direct the jet of coolant precisely in the desired direction. Supplied as complete hose assemblies with BSP male thread connection and an outlet nozzle. Code example of DN 6 hose assembly, 500 mm long: WR-FR201-06-500.

code	DN [mm]	thread [inch]	spanner size [mm]	bending radius [mm]	length [mm]						
WM-FR201-04-...	4	1/8	15	64	200	250	320	400	-	-	-
WM-FR201-06-...	6	1/4	19	72	200	250	320	400	500	630	-
WM-FR201-08-...	8	3/8	24	88	-	250	320	400	500	630	-
WM-FR201-10-...	10	1/2	27	110	-	-	320	400	500	630	800
WM-FR201-16-...	16	3/4	36	110	-	-	-	-	500	630	-



### HYDRAFIX FR 211

**Inner layer:** Black PVC  
**Reinforcement:** Steel supporting coil (additional nickel-plated steel helix protection up to DN 10)  
**Working press.:** 4 bar

Hose designed for low pressure transfer of air, water, oils and other coolants used during metalworking processes. Due to the special construction, the hose has so-called shape memory, so once bent, it remains in that position. Therefore, it is easy to direct the jet of coolant precisely in the desired direction. Supplied as complete hose assemblies with BSP male thread with metric male thread. Code example of DN 6 hose assembly, 500 mm long: WM-FR211-06-500.

code	DN [mm]	thread [inch]	thread outlet [mm]	spanner size [mm]	bending radius [mm]	length [mm]						
WM-FR211-04-...	4	1/8	M10x1	15	64	220	250	320	400	-	-	-
WM-FR211-06-...	6	1/4	M12x1	19	72	200	250	320	400	500	630	-
WM-FR211-08-...	8	3/8	M16x1	24	88	-	250	320	400	500	630	-
WM-FR211-10-...	10	1/2	M18x1	27	110	-	-	320	400	500	630	800
WM-FR211-16-...	16	3/4	M26x1.5	36	110	-	-	-	-	500	630	-



## Selection, installation and handling of steam hoses

This manual refers to selection, installation and handling of steam rubber hoses. It includes safety guidelines that should be strictly obeyed by the user.

### HOSE SELECTION

To select an appropriate hose for steam application we have to determine its working conditions at first:

- maximum working pressure of steam,
- steam temperature,
- kind of steam: wet saturated steam (with water particles), dry saturated steam, superheated steam,
- whether sudden increase of pressure occurs in the hose,
- whether the hose is bent during its work under pressure,
- whether the hose is used continuously or occasionally,
- whether the hose requires manual handling,
- external working conditions of the site where the hose is to work (possibility of mechanical abuse, presence of spilled or condensing aggressive chemicals or oils that may have an effect on the external layer of the hose).

### Dependence of saturated steam temperature on its pressure (overpressure - indicated by pressure gauge)

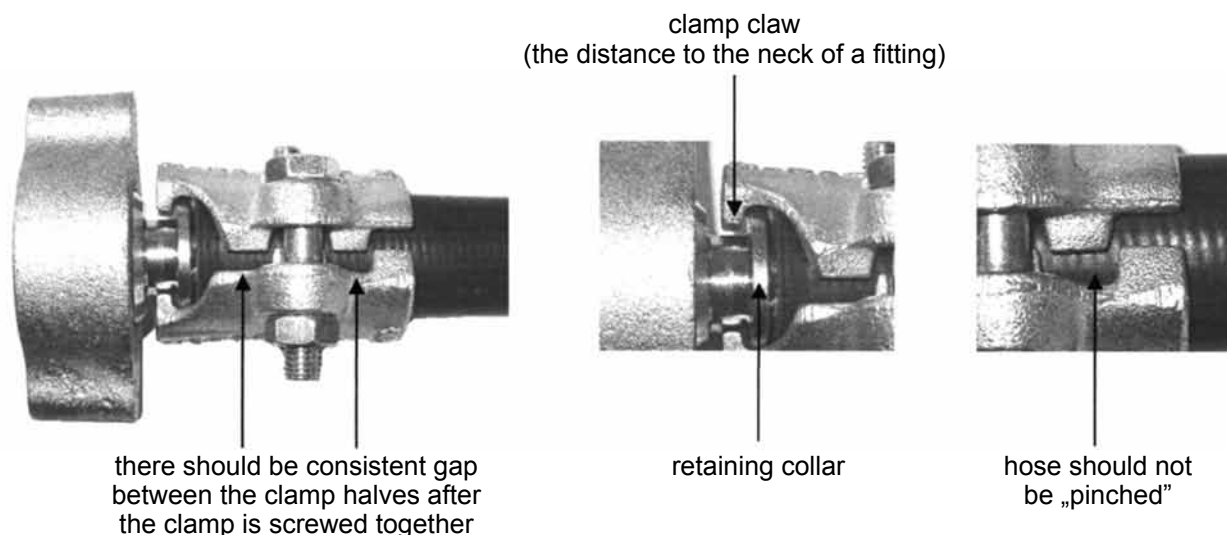
press. [bar]	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	22	24
temp. [°C]	120	134	144	152	159	165	171	175	180	184	188	192	195	198	201	207	207	210	213	215	220	224

**Steam rubber hoses can be used for hot water at the max. temperature of about +90°C.**

Hose designed for steam transfer should be properly marked on its cover. To match the hose with its working conditions, contact Sales or Technical Department of TUBES INTERNATIONAL®.

### HOSE MOUNTING

It is vital to obey general rules concerning flexible hose installation (check Technical Information chapter). Make sure that fittings (hose couplings) are designed for steam. TUBES INTERNATIONAL® advises to use only fittings specially designed for steam that are fitted on a hose with the use of bolt screw clamps. This type of clamp allows the connection to be tightened. Selection and installation guidelines provided by a supplier must be obeyed while installing the fittings. Clamp bolts must be tightened during operation. Tightening of the bolts should always be checked before the hose is used. It is important to avoid excessive bending of the hose next to hose fittings.



## INDUSTRIAL HOSES - steam



**TUBES INTERNATIONAL® warns against using steam hoses with fittings assembled on a hose with a crimped ferrule. Such an assembly method does not allow to tighten it during operation. It is very important as during operation the elastic quality of hose material (rubber) is gradually decreasing. When a clamp cannot be tightened a leakage or even a catastrophic burst from the fitting of a hose can occur !**

### STORAGE

A hose that is not used should be stored in a proper way on a suitable stand or a pallet. Appropriate storage reduces the danger of hose damage. We must not hang a hose on a hook, nail or other rail that may cause puncture or damage.

### REGULAR MAINTENANCE AND INSPECTION OF STEAM HOSES

All rubber steam hoses wear away during their working life. For safety reasons regular maintenance and inspection of steam hoses is of primary importance. Staff handling the hose should pay special attention to:

- rubber pellets or blisters occurring on the hose cover,
- cracks that expose the hose braid,
- leakage of steam occurring near hose fittings or in other hose parts,
- flattening or kinks that may cause hose damage in the future,
- decrease in steam flow indicating swelling of internal layer.

If any of the above occurs, the hose must be shut down from operation immediately. The hose must be thoroughly inspected before next use.

Hose damage usually happens on its ends, as they are excessively exposed to bending and deformation (near hose fittings). If such damage occurs, we have to cut off the damaged end and mount the fitting once again.

Hoses regularly used at high temperature should undergo routine inspection every now and then to check if the internal layer gets tough. In most cases removing the clamps to perform the inspection is required.

### SAFETY REGULATION

- Staff must wear suitable working clothes, gloves, rubber shoes and eye safety protection. Working clothes prevent the body from burns in case of steam or hot water burst.
- Staff must make sure that working area is danger free and tidy.
- Staff must check tightening of all connections before turning on an installation.
- One must not leave the hose under pressure when an installation is shut down as it gradually shortens the working life of a hose.

### NOTE !!!

**Steam is dangerous. It can cause destruction of equipment, serious injury or even death. In order to prevent such accidents we have to select a correct hose and put all safety guidelines concerning installation, maintenance, service and storage into use.**

## INDUSTRIAL HOSES - steam



### ★ ★ ★ ★ ★ STEAM STAR / 6

**Internal layer:** Black EPDM rubber  
**Reinforcement:** Synthetic braid  
**External layer:** Black EPDM rubber  
**Working temp.:** From -40°C up to +170°C

Delivery hose designed to transfer hot water and saturated steam. External layer resistant to weather conditions, high temperature and ozone.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
SO-STEAMSTAR6-13	13	21	6	60	0.26	61
SO-STEAMSTAR6-16	16	25	6	60	0.35	61
SO-STEAMSTAR6-19	19	29	6	60	0.46	61
SO-STEAMSTAR6-25	25	36	6	60	0.55	61
SO-STEAMSTAR6-32	32	44	6	60	0.87	61
SO-STEAMSTAR6-38	38	50	6	60	1.00	61
SO-STEAMSTAR6-51	51	67	6	60	1.77	61



### MANITOBA®

**Internal layer:** Black EPDM rubber  
**Reinforcement:** Synthetic braid  
**External layer:** Black EPDM rubber  
**Working temp.:** From -40°C up to +163°C

Delivery hose designed to transfer saturated steam. Good resistance to high temperature, ozone and abrasion. Available manufactured according to EN ISO 6134/05 type 1 class A.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-MANITOBA-008X18	8	18	6	60	0.21	120
IV-MANITOBA-010X20	10	20	6	60	0.24	120
IV-MANITOBA-013X21,5	13	21.5	6	60	0.23	120
IV-MANITOBA-013X23	13	23	6	60	0.29	120
IV-MANITOBA-016X25	16	25	6	60	0.31	120
IV-MANITOBA-019X29	19	29	6	60	0.39	120
IV-MANITOBA-019X32	19	32	6	60	0.54	120
IV-MANITOBA-025X35	25	35	6	60	0.49	120
IV-MANITOBA-025X38	25	38	6	60	0.67	120
IV-MANITOBA-032X44	32	44	6	60	0.71	120
IV-MANITOBA-032X46,5	32	46.5	6	60	0.90	120
IV-MANITOBA-038X50	38	50	6	60	0.82	120
IV-MANITOBA-038X54	38	54	6	60	1.18	120
IV-MANITOBA-051X67	51	67	6	60	1.52	120
IV-MANITOBA-063X80,5	63.5	80.5	6	60	2.17	120
IV-MANITOBA-076X94	76	94	6	60	2.75	120
IV-MANITOBA-076X96,5	76	96.5	6	60	2.78	120
IV-MANITOBA-102X122	102	122	6	60	4.10	120

## INDUSTRIAL HOSES - steam



### PATOS®

**Internal layer:** White butyl rubber  
**Reinforcement:** Synthetic braid  
**External layer:** Blue NBR/PVC rubber  
**Working temp.:** From -30°C up to +95°C - water  
 From -30°C up to +165°C - steam

Delivery hose designed for cleaning and rinsing with hot water and steam of installations and machines used in food industry. Internal layer meets the requirements of FDA 21 CFR 177.2600 and BfR XXI cat.2. External layer is resistant to vegetable and animal fats.

code	I.D. [mm]	O.D. [mm]	working pressure water / steam [bar]	safety factor water / steam	weight [kg/m]	standard length [m]
IV-PATOS-013	13	23	10 / 6	3 / 10	0.38	120
IV-PATOS-016	16	26	10 / 6	3 / 10	0.45	120
IV-PATOS-019	19	31	10 / 6	3 / 10	0.63	120
IV-PATOS-025	25	35	10 / 6	3 / 10	0.64	120
IV-PATOS-032	32	48	10 / 6	3 / 10	1.35	120
IV-PATOS-038	38	54	10 / 6	3 / 10	1.55	120
IV-PATOS-051	51	69.5	10 / 6	3 / 10	2.32	120
IV-PATOS-065	65	79	10 / 6	3 / 10	2.01	120



### VICTORIA®

**Internal layer:** Black EPDM rubber  
**Reinforcement:** Plies of steel wire braid  
**External layer:** Black (red) EPDM rubber (pin-pricked)  
**Working temp.:** From -40°C up to +210°C (with peaks up to +232°C)

High pressure delivery hose designed for superheated steam. External layer resistant to high temperature and weather conditions.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-VICTORIA-008	8	20	18	180	0.37	120
IV-VICTORIA-010	10	22	18	180	0.42	120
IV-VICTORIA-013	13	25	18	180	0.50	120
IV-VICTORIA-016	16	27	18	180	0.58	120
IV-VICTORIA-019	19	30	18	180	0.66	120
IV-VICTORIA-025	25	37	18	180	0.89	120
IV-VICTORIA-032	32	44.5	18	180	1.13	120
IV-VICTORIA-038	38	52	18	180	1.46	120
IV-VICTORIA-051	51	65.5	18	180	2.11	120
IV-VICTORIA-063	63.5	81.5	18	180	3.33	120
IV-VICTORIA-076	76	96.5	18	180	4.35	120
IV-VICTORIA-102	102	124	18	180	6.73	120

An exemplary code of the hose with red external layer: IV-VICTORIA-025R.

## INDUSTRIAL HOSES - steam



### VICTORIA EN ISO 6134®

**Internal layer:** Black EPDM rubber  
**Reinforcement:** Plies of steel wire braid  
**External layer:** Black (red) EPDM rubber (pin-pricked)  
**Working temp.:** From -40°C up to +210°C (with peaks up to +232°C)

High pressure delivery hose designed for superheated steam. External layer resistant to high temperature and weather conditions. Antistatic - R <10<sup>6</sup> Ω. According to EN ISO 6134/05 type 2 class A (Ω) standards.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-VICTORIA-EN-19	19	33	18	180	0.77	60
IV-VICTORIA-EN-25	25	39.5	18	180	1.06	60
IV-VICTORIA-EN-32	32	48	18	180	1.40	60
IV-VICTORIA-EN-38	38	54	18	180	1.60	60
IV-VICTORIA-EN-51	51	69	18	180	2.57	60



### VAPOFER®

**Internal layer:** Black EPDM rubber  
**Reinforcement:** Plies of steel wire braid  
**External layer:** Black (red) EPDM rubber (pin-pricked)  
**Working temp.:** From -40°C up to +210°C

High pressure delivery hose designed for superheated steam. External layer resistant to oil, high temperature and weather conditions. Available manufactured according to EN ISO 6134/05 type 2 class B (Ω).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-VAPOFER-013	13	27	18	180	0.60	60
IV-VAPOFER-019	19	33.5	18	180	0.86	60
IV-VAPOFER-025	25	40	18	180	1.18	60
IV-VAPOFER-032	32	48	18	180	1.40	60
IV-VAPOFER-038	38	54	18	180	1.60	60
IV-VAPOFER-051	51	69	18	180	2.56	60
IV-VAPOFER-063	63.5	84	18	180	3.72	60
IV-VAPOFER-076	76	101	18	180	5.24	60
IV-VAPOFER-102	102	128	18	180	6.95	60

## INDUSTRIAL HOSES - steam

### Fittings for steam hoses



#### MS fitting

**Material:** Steel, malleable iron, stainless steel, brass

Male BSPT thread fitting that provides a safe connection between a hose and an installation. Assembled on the hose with a SBC clamp.

code (steel)	code (malleable iron)	code (stainless steel)	code (brass)	thread [inch]	hose I.D. [inch]
DX-MS-04-04	-	-	-	1/4	1/4
DX-MS-04-06	-	-	-	3/8	1/4
DX-MS-06-06	-	-	-	3/8	3/8
DX-MS-08-08	-	DX-MS-08-08-SS	-	1/2	1/2
DX-MS-12-12	-	DX-MS-12-12-SS	DX-MS-12-12-B	3/4	3/4
DX-MS-12-16	-	-	-	1	3/4
DX-MS-16-12	-	-	-	3/4	1
DX-MS-16-16	-	DX-MS-16-16-SS	DX-MS-16-16-B	1	1
-	DX-MS-20-20	DX-MS-20-20-SS	DX-MS-20-20-B	1.1/4	1.1/4
-	DX-MS-24-24	DX-MS-24-24-SS	DX-MS-24-24-B	1.1/2	1.1/2
-	DX-MS-32-32	DX-MS-32-32-SS	DX-MS-32-32-B	2	2
-	DX-MS-40-40	DX-MS-40-40-SS	-	2.1/2	2.1/2
-	DX-MS-48-48	DX-MS-48-48-SS	DX-MS-48-48-B	3	3
-	DX-MS-64-64	-	-	4	4



#### GF fitting

**Material:** Steel/malleable iron, stainless steel, brass

Female BSP thread fitting that provides a safe connection between a hose and an installation. Assembled on the hose with a SBC clamp.

code (steel/malleable iron)	code (stainless steel)	code (brass)	thread [inch]	hose I.D. [inch]
DX-GF-04-04	-	-	1/4	1/4
DX-GF-06-06	-	-	3/8	3/8
DX-GF-08-08	-	-	1/2	1/2
DX-GF-12-12	DX-GF-12-12-SS	DX-GF-12-12-B	3/4	3/4
DX-GF-16-16	DX-GF-16-16-SS	DX-GF-16-16-B	1	1
DX-GF-20-20	DX-GF-20-20-SS	DX-GF-20-20-B	1.1/4	1.1/4
DX-GF-24-24	DX-GF-24-24-SS	DX-GF-24-24-B	1.1/2	1.1/2
DX-GF-32-32	DX-GF-32-32-SS	DX-GF-32-32-B	2	2
DX-GF-40-40	-	-	2.1/2	2.1/2
DX-GF-48-48	-	-	3	3
DX-GF-64-64	-	-	4	4
DX-GF-80-80	-	-	6	6

# INDUSTRIAL HOSES - steam

## Fittings for steam hoses



### SBC clamp for MS, GF fittings

**Material:** Malleable iron, stainless steel, brass

Clamp designed to assemble MS and GF fittings on a hose.

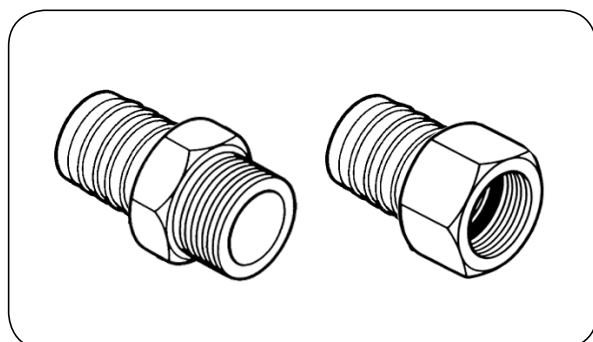
Minimum and maximum diameters listed in the table, are only an indication for a clamp choice. Structure of the hose may vary so it is essential to check if the actual size of a clamp matches. Clamps should be regularly checked and tightened during operation.

code (malleable iron)	code (stainless steel)	code (brass)	hose I.D. [inch]	hose O.D. [mm]		number of bolts
				min.	max.	
DX-SBC2-04-14-17	-	-	1/4	14	17	2
DX-SBC2-06-17-22	-	-	3/8	17.5	22	
DX-SBC2-08-20-24	-	-	1/2	20.5	24	
DX-SBC2-08-24-27	DX-SBC2-08-24/27-SS	DX-SBC2-08-24/27-B	1/2	24	27	
DX-SBC2-12-27-30	-	-	1/2	27	30	
DX-SBC2-12-30-33	DX-SBC2-12-30/33-SS	DX-SBC2-12-30/33-B	3/4	30	33	
DX-SBC2-12-33-38	DX-SBC2-12-33/38-SS	DX-SBC2-12-33/38-B	3/4	33	38	
DX-SBC2-12-38-43	-	-	3/4	38	43	
DX-SBC4-08-23-26	-	-	1/2	23	26	4
DX-SBC4-16-35-40	-	-	1	35.5	40	
DX-SBC4-16-39-43	DX-SBC4-16-39/43-SS	DX-SBC4-16-39/43-B	1	39	43.5	
DX-SBC4-16-43-49	DX-SBC4-16-43/49-SS	DX-SBC4-16-43/49-B	1	43	49	
DX-SBC4-16-49-54	-	-	1	49	54	
DX-SBC4-20-38-45	-	-	1.1/4	38	45.5	
DX-SBC4-20-45-53	-	-	1.1/4	45.5	53	
DX-SBC4-20-54-60	DX-SBC4-20-54/60-SS	DX-SBC4-20-54/60-B	1.1/4	54	60	
DX-SBC4-24-46-51	-	-	1.1/2	46	51	
DX-SBC4-24-51-56	-	-	1.1/2	51	56	
DX-SBC4-24-55-60	DX-SBC4-24-55/60-SS	DX-SBC4-24-55/60-B	1.1/2	55.5	60	
DX-SBC4-24-60-65	DX-SBC4-24-60/65-SS	DX-SBC4-24-60/65-B	1.1/2	60	65	
DX-SBC4-24-65-70	-	-	1.1/2	65	70	
DX-SBC4-32-57-63	-	-	2	57	63.5	
DX-SBC4-32-59-64	-	-	2	59.5	64	
DX-SBC4-32-63-71	DX-SBC4-32-63/71-SS	DX-SBC4-32-63/71-B	2	63.5	71	
DX-SBC4-32-70-78	DX-SBC4-32-70/78-SS	DX-SBC4-32-70/78-B	2	70	78	6
DX-SBC4-32-78-87	-	-	2	78.8	87.5	
DX-SBC4-40-78-87	-	-	2.1/2	78.5	87.5	
DX-SBC4-40-89-100	-	-	2.1/2	89	100	
DX-SBC4-48-89-100	-	-	3	89	100	
DX-SBC4-48-96-103	-	-	3	96.5	103	
DX-SBC4-48-103-113	-	-	3	103	113	
DX-SBC6-48-108-122	-	-	3	108	122	
DX-SBC6-64-117-127	-	-	4	117.5	127	
DX-SBC6-64-123-133	-	-	4	123.5	133.5	
DX-SBC6-64-133-142	-	-	4	133.5	142	6
DX-SBC6-64-140-151	-	-	4	140.5	151	
DX-SBC6-80-174-187	-	-	6	174.5	187	
DX-SBC6-80-190-203	-	-	6	190	203	



# INDUSTRIAL HOSES - steam

## Fittings for steam hoses



### VSS, MSS fittings

**Material:** St (carbon steel),  
SS (AISI 316Ti stainless steel)  
Ms (brass)

**Working press.:** 18 bar (+210°C) - saturated steam, for  
other application at ambient temp. up  
to 160 bar,  
brass - 64 bar (contact Technical De-  
partment for advice)

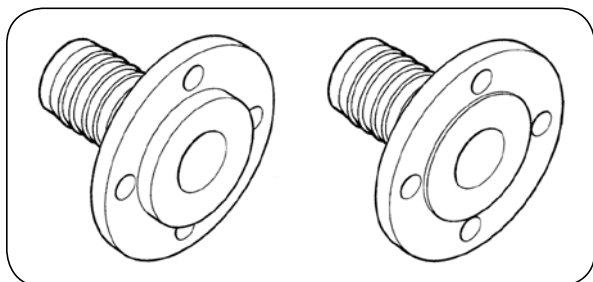
Fittings designed for steam rubber hoses. Assembled on the hose using clamps according to EN 14423 (DIN 2826).

VSS fitting with a male thread					MSS fitting with a female thread				
code	DN	thread	seal-face	material	code	DN	thread	seal-face	material
RS-321130050110	DN15 (1/2")	1/2" BSPT	thread/flat	St	RS-121130050111	DN15 (1/2")	1/2" BSP	flat	St
RS-321130050120			thread/flat	SS	RS-131130050111			cone	St
RS-321130050130			thread/flat	Ms	RS-121130050122			flat	SS
RS-321130050310		1/2" NPT	thread	St	RS-121130050133			flat	Ms
RS-321130050320			thread	SS	RS-131130221433		M22x1.5	cone	Ms
RS-321130050330			thread	Ms	RS-121130075111			flat	St
RS-321130075110		3/4" BSPT	thread/flat	St	RS-121130075122		3/4" BSP	flat	SS
RS-321130075120			thread/flat	SS	RS-121130075133			flat	Ms
RS-321190075110	DN20 (3/4")	3/4" BSPT	thread/flat	St	RS-121190075111	DN20 (3/4")	3/4" BSP	flat	St
RS-321190075120			thread/flat	SS	RS-131190075111			cone	St
RS-321190075130			thread/flat	Ms	RS-121190075122			flat	SS
RS-321190075310		3/4 „ NPT	thread	St	RS-121190075133			flat	Ms
RS-321190075320			thread	SS	RS-131190301433		M30x1.5	cone	Ms
RS-321190075330			thread	Ms	RS-121190100111			flat	St
RS-321190100110		1" BSPT	thread/flat	St	RS-121190100122		1" BSP	flat	SS
RS-321190100120			thread/flat	SS	RS-121190100133			flat	Ms
RS-321250100110	DN25 (1")	1" BSPT	thread/flat	St	RS-121250100111	DN25 (1")	1" BSP	flat	St
RS-321250100120			thread/flat	SS	RS-131250100111			cone	St
RS-321250100130			thread/flat	Ms	RS-121250100122			flat	SS
RS-321250100310		1" NPT	thread	St	RS-121250100133			flat	Ms
RS-321250100320			thread	SS	RS-131250381433		M38x1.5	cone	Ms
RS-321250100330			thread	Ms	RS-121250125111			flat	St
RS-321320125110	DN32 (1.1/4")	1.1/4" BSPT	thread/flat	St	RS-121250125122	DN32 (1.1/4")	1.1/4" BSP	flat	SS
RS-321320125120			thread/flat	SS	RS-121250125133			flat	Ms
RS-321320125130			thread/flat	Ms	RS-121320125111			flat	St
RS-321320125310		1.1/4" NPT	thread	St	RS-131320125111		1.1/4" BSP	cone	St
RS-321320125320			thread	SS	RS-121320125122			flat	SS
RS-321320125330			thread	Ms	RS-121320125133			flat	Ms
RS-321380150110	DN40 (1.1/2")	1.1/2" BSPT	thread/flat	St	RS-131320451433	DN40 (1.1/2")		M45x1.5	cone
RS-321380150120			thread/flat	SS	RS-121380150111		flat		St
RS-321380150130			thread/flat	Ms	RS-131380150111		1.1/2" BSP	cone	St
RS-321380150310		1.1/2" NPT	thread	St	RS-121380150122			flat	SS
RS-321380150320			thread	SS	RS-121380150133			flat	Ms
RS-321380150330			thread	Ms	RS-131380521433			M52x1.5	cone
RS-321500200110	DN50 (2")	2" BSPT	thread/flat	St	RS-121500200111	DN50 (2")	2" BSP		flat
RS-321500200120			thread/flat	SS	RS-131500200111			cone	St
RS-321500200130			thread/flat	Ms	RS-121500200122			flat	SS
RS-321500200310		2" NPT	thread	St	RS-121500200133			flat	Ms
RS-321500200320			thread	SS	RS-131500652433		M65x2	cone	Ms
RS-321500200330			thread	Ms					



# INDUSTRIAL HOSES - steam

## Fittings for steam hoses



## FSS flange fittings

**Material:** St (galvanized steel),  
SS (AISI 316 stainless steel)

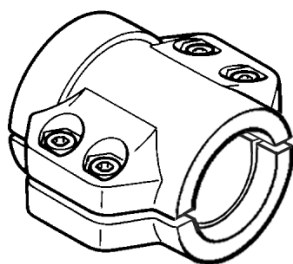
**Working press.:** 18 bar (+210°C) - saturated steam, for other application at ambient temp. up to 160 bar,  
From DN65 - 64 bar (contact Technical Department for advice)

Flange fittings designed for rubber steam hoses, with a serrated hose tail, with a lock - to be mounted with safety clamps for steam (EN14423, DIN 2826).

hose I.D.		flange		material	code	
[inch]	[mm]	size	type		swivel flange	fixed flange
1/2"	13	DN15	PN40	St	RS-FSS2-015-013-ST	RS-FSS1-015-013-ST
				SS / St	RS-FSS2-015-013-SST	-
				SS	RS-FSS2-015-013-SS	RS-FSS1-015-013-SS
		1/2"	ASA 150	St	RS-FSA2-015-013-ST	RS-FSA1-015-013-ST
			ASA 300	St	RS-FSA4-015-013-ST	RS-FSA3-015-013-ST
3/4"	19	DN20	PN40	St	RS-FSS2-020-019-ST	RS-FSS1-020-019-ST
				SS / St	RS-FSS2-020-019-SST	-
				SS	RS-FSS2-020-019-SS	RS-FSS1-020-019-SS
		3/4"	ASA 150	St	RS-FSA2-020-019-ST	RS-FSA1-020-019-ST
			ASA 300	St	RS-FSA4-020-019-ST	RS-FSA3-020-019-ST
1"	25	DN25	PN40	St	RS-FSS2-025-025-ST	RS-FSS1-025-025-ST
				SS / St	RS-FSS2-025-025-SST	-
				SS	RS-FSS2-025-025-SS	RS-FSS1-025-025-SS
		1"	ASA 150	St	RS-FSA2-025-025-ST	RS-FSA1-025-025-ST
			ASA 300	St	RS-FSA4-025-025-ST	RS-FSA3-025-025-ST
1.1/4"	32	DN32	PN40	St	RS-FSS2-032-032-ST	RS-FSS1-032-032-ST
				SS / St	RS-FSS2-032-032-SST	-
				SS	RS-FSS2-032-032-SS	RS-FSS1-032-032-SS
		1.1/4"	ASA 150	St	RS-FSA2-032-032-ST	RS-FSA1-032-032-ST
			ASA 300	St	RS-FSA4-032-032-ST	RS-FSA3-032-032-ST
1.1/2"	38	DN40	PN40	St	RS-FSS2-040-038-ST	RS-FSS1-040-038-ST
				SS / St	RS-FSS2-040-038-SST	-
				SS	RS-FSS2-040-038-SS	RS-FSS1-040-038-SS
		1.1/2"	ASA 150	St	RS-FSA2-040-038-ST	RS-FSA1-040-038-ST
			ASA 300	St	RS-FSA4-040-038-ST	RS-FSA3-040-038-ST
2"	50	DN50	PN16	St	RS-FSS2-050-050-ST	RS-FSS1-050-050-ST
				SS / St	RS-FSS2-050-050-SST	-
				SS	RS-FSS2-050-050-SS	RS-FSS1-050-050-SS
			PN40	St	RS-FSS4-050-050-ST	RS-FSS3-050-050-ST
				SS / St	RS-FSS4-050-050-SST	-
				SS	RS-FSS4-050-050-SS	RS-FSS3-050-050-SS
		2"	ASA 150	St	RS-FSA2-050-050-ST	RS-FSA1-050-050-ST
			ASA 300	St	RS-FSA4-050-050-ST	RS-FSA3-050-050-ST
2.1/2"	65	DN65	PN16	St	RS-FSS2-065-065-ST	RS-FSS1-065-065-ST
			PN40	St	RS-FSS4-065-065-ST	RS-FSS3-065-065-ST
		2.1/2"	ASA 150	St	RS-FSA2-065-065-ST	RS-FSA1-065-065-ST
			ASA 300	St	RS-FSA4-065-065-ST	RS-FSA3-065-065-ST
			ASA 300	St	RS-FSA4-065-065-ST	RS-FSA3-065-065-ST
3"	75	DN80	PN16	St	RS-FSS2-080-075-ST	RS-FSS1-080-075-ST
			PN40	St	RS-FSS4-080-075-ST	RS-FSS3-080-075-ST
		3"	ASA 150	St	RS-FSA2-080-075-ST	RS-FSA1-080-075-ST
			ASA 300	St	RS-FSA4-080-075-ST	RS-FSA3-080-075-ST
			ASA 300	St	RS-FSA4-080-075-ST	RS-FSA3-080-075-ST
4"	100	DN100	PN16	St	RS-FSS2-100-100-ST	RS-FSS1-100-100-ST
			PN40	St	RS-FSS4-100-100-ST	RS-FSS3-100-100-ST
			ASA 150	St	RS-FSA2-100-100-ST	RS-FSA1-100-100-ST
		4"	ASA 300	St	RS-FSA4-100-100-ST	RS-FSA3-100-100-ST
			ASA 300	St	RS-FSA4-100-100-ST	RS-FSA3-100-100-ST

## INDUSTRIAL HOSES - steam

### Fittings for steam hoses



### Safety clamps EN 14423 (DIN 2826) for VSS, MSS, FSS

**Material:** Ms (cast brass)  
Ms\* (forged brass)  
SS (AISI 316Ti stainless steel)

**Working press.:** 18 bar (+210°C) - saturated steam, for other application at ambient temperature up to 160 bar (contact Technical Department for advice)

Safety clamps are used for assembling VSS, MSS and FSS fittings on hoses. They are designed especially for rubber steam hoses.

code	hose I.D x W.T. [mm]	D min ÷ max [mm]	material	bolts	code	hose I.D x W.T. [mm]	D min ÷ max [mm]	material	bolts
RS-635013005030	13 x 5	22 ÷ 24	Ms*	M6x20	RS-635050009020	50 x 9	67 ÷ 69	SS	M10x40
RS-635013006020	13 x 6	24 ÷ 26	SS		RS-635050009030			Ms*	
RS-635013006030			Ms*		RS-635050010030	50 x 10	69 ÷ 71	Ms*	
RS-635013007030	13 x 7	26 ÷ 28	Ms*		RS-635050012030	50 x 12	73 ÷ 76	Ms	
RS-635019006030	19 x 6	30 ÷ 33	Ms*	M8x25	RS-635065010030	65 x 10	84 ÷ 87	Ms	
RS-635019007020	19 x 7	32 ÷ 34	SS		RS-635065012030	65 x 12	88 ÷ 91	Ms	
RS-635019007030			Ms*		RS-635075010030	75 x 10	94 ÷ 97	Ms	
RS-635019008030	19 x 8	34 ÷ 36	Ms*		RS-635075012030	75 x 12	98 ÷ 101	Ms	
RS-635025007030	25 x 6.5	37 ÷ 39	Ms*		RS-635075014030	75 x 14	102 ÷ 105	Ms	
RS-635025008020	25 x 7.5	39 ÷ 41	SS		RS-637100008020	100 x 8	114 ÷ 119	SS	
RS-635025008030			Ms*		RS-637100008030			Ms*	
RS-635025009030	25 x 8.5	41 ÷ 43	Ms*		RS-637100010030	100 x 10	118 ÷ 122	Ms	
RS-635032006030	32 x 6	43 ÷ 46	Ms*		RS-637100012030	100 x 12	122 ÷ 126	Ms	
RS-635032008020	32 x 8	47 ÷ 50	SS		RS-637100014030	100 x 14	126 ÷ 130	Ms	
RS-635032008030			Ms*		RS-637100016030	100 x 16	130 ÷ 134	Ms	
RS-635038008020	38 x 8	53 ÷ 56	SS	M10x40					
RS-635038008030			Ms*						
RS-635038010030	38 x 10	57 ÷ 60	Ms*						

# INDUSTRIAL HOSES - steam

## Fittings for steam hoses



### SSF fittings

**Material:** SS (AISI 304 stainless steel)  
Brass

**Working press.:** 18 bar (+210°C)

Economical version of fittings intended for rubber steam hoses. Assembled in the hose using EN 14423 (DIN 2826) clamps.

Female thread fittings					
code	size	thread [inch]	diameter [mm]	seal	material
TI-SSF-FB-08-08-MS	DN15	1/2 BSP	15	flat	Ms
TI-SSF-FB-08-08-SS					SS
TI-SSF-FB-12-12-MS	DN20	3/4 BSP	21	flat	Ms
TI-SSF-FB-12-12-SS					SS
TI-SSF-FB-16-16-MS	DN25	1 BSP	27	flat	Ms
TI-SSF-FB-16-16-SS					SS
TI-SSF-FB-20-20-MS	DN32	1.1/4 BSP	34	flat	Ms
TI-SSF-FB-20-20-SS					SS
TI-SSF-FB-24-24-MS	DN38	1.1/2 BSP	40.5	flat	Ms
TI-SSF-FB-24-24-SS					SS
TI-SSF-FB-32-32-MS	DN50	2 BSP	52.5	flat	Ms
TI-SSF-FB-32-32-SS					SS

Male thread fittings					
code	size	thread [inch]	diameter [mm]	seal	material
TI-SSF-MB-08-08-MS	DN15	1/2 BSPT	15	thread / flat	Ms
TI-SSF-MB-08-08-SS					SS
TI-SSF-MB-12-12-MS	DN20	3/4 BSPT	21	thread / flat	Ms
TI-SSF-MB-12-12-SS					SS
TI-SSF-MB-16-16-MS	DN25	1 BSPT	27	thread / flat	Ms
TI-SSF-MB-16-16-SS					SS
TI-SSF-MB-20-20-MS	DN32	1.1/4 BSPT	34	thread / flat	Ms
TI-SSF-MB-20-20-SS					SS
TI-SSF-MB-24-24-MS	DN38	1.1/2 BSPT	40.5	thread / flat	Ms
TI-SSF-MB-24-24-SS					SS
TI-SSF-MB-32-32-MS	DN50	2 BSPT	52.5	thread / flat	Ms
TI-SSF-MB-32-32-SS					SS

## INDUSTRIAL HOSES - steam

### Fittings for steam hoses



### Safety clamps SSC (EN 14423)

**Material:** SS (AISI 316 stainless steel)  
Brass

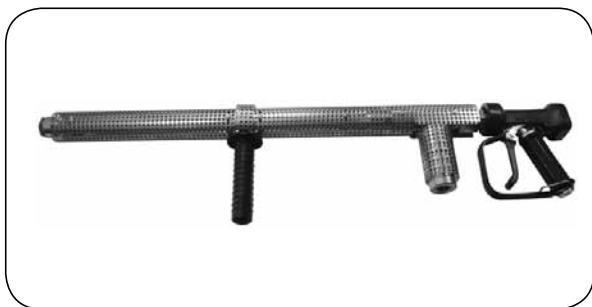
**Working press.:** 18 bar (+210°C)

Economical version of safety clamps intended for steam rubber hoses mainly.

code	hose I.D x W.T. [mm]	D min ÷ max [mm]	material
TI-SSC-013-060-MS	13 x 6	24 ÷ 26	Ms
TI-SSC-013-060-SS			SS
TI-SSC-019-050-SS	19 x 5	28 ÷ 30	SS
TI-SSC-019-070-MS	19 x 7	32 ÷ 34	Ms
TI-SSC-019-070-SS			SS
TI-SSC-025-075-MS	25 x 7.5	39 ÷ 41	Ms
TI-SSC-025-075-SS			SS
TI-SSC-032-080-MS	32 x 8	47 ÷ 50	Ms
TI-SSC-032-080-SS			SS
TI-SSC-038-080-MS	38 x 8	53 ÷ 56	Ms
TI-SSC-038-080-SS			SS
TI-SSC-050-090-MS	50 x 9	67 ÷ 69	Ms
TI-SSC-050-090-SS			SS

## INDUSTRIAL HOSES - steam

### Accessories



### DSG - gun steam

**Material:** AISI 304 steel

**Seals:** O-rings: EPDM,  
Novapress flat seal

**Working press.:** To 10 bar (steam), to 15 bar (water)

**Working. temp.:** +180°C (steam), +120°C (water)

**Ambient temp.:** From 0°C up to +40°C

A jet cleaner designed for steam and hot water. An insulated handle and perforated housing prevent accidental contact with hot metal parts. Widely used for cleaning equipment in pharmaceutical, food, cosmetic and chemical industry. Meets the requirements of ATEX Directive for operation in zone 1 and 2.

picture	code	connection	description
	RS-27407500016109	3/4" BSP female 3/4" BSP male - nozzle, jet extension connection	DSG steam and hot water gun.
	RS-27407500016001	3/4" BSP female	Fan nozzle. Flow rate: 26 l/min (at 10 bar pressure), Angle of spray: 25°.
	RS-27407500016002	3/4" BSP female	Spot nozzle. Flow rate: 43.3 l/min (at 10 bar pressure), Angle of spray: 0°.
	RS-27407500016003	3/4" BSP female	Cone nozzle. Flow rate: 31.7 l/min (at 8 bar pressure), Angle of spray: 45°.
	RS-27307500016029	3/4" BSP female 3/4" BSP male - nozzle connection	Jet extension - facilitates access to troublesome areas. Length: 600 mm.
	RS-27307500016042	fitted with screws at the front of the gun, where the jet nozzle is connected	Additional handle - used with jet extension.
	RS-5950750751160901	3/4" BSP female 3/4" BSP male	Swivel coupling - pro- tects the connected hose against twisting.
	RS-274075000101	-	Seal set for steam gun.

## INDUSTRIAL HOSES - food

Hoses designed to transfer foodstuffs are made from materials approved to come into contact with food. The internal layer of the hoses is made from rubber compound, which is white, odour-free and taste-free. It may also be composed of PVC, polyethylene and other polymers that feature high level of purity, do not contain dangerous substances or those deteriorating health and organoleptic characteristics of transferred products. Various hose types can be used to transfer such foods as drinking water, milk and dairy products, alcohol, fruit juices, beverages, fats, oils etc. These hoses are also used in pharmaceutical and cosmetics industry.

For more food grade hoses, see the following groups: general purpose hoses, PTFE hoses, silicone hoses, material handling hoses (loose bulk foods), ducting hoses, hoses for chemicals and TYGON® tubing.

### Hygiene requirements for construction materials of hoses approved to come into contact with food

The construction material of every hose, except for its basic component i.e. elastomer (rubber hoses) or polymer (plastic hoses), contains many additives to ensure appropriate processing properties of raw materials, which in turn, give as good mechanical and chemical properties of the finished hose as possible. They include various types of cross-linking agents, plasticizers (softening agents), fillers, stabilizers, antioxidants, dyes etc. However, potential contaminants from the raw materials may also be present.

When the hoses are used in a food production process or food processing, the material of internal layer is in direct contact with the food substance that flows through the hose - from the beginning to the end of the whole process, so until cleaning of the hose or whole installation is finished. As a result of this contact, the process of extraction (removal) of the additives from rubber or plastic compound takes place, followed by migration (transfer, movement) into liquid food substance which acts as a solvent. The amount of migration basically depends on the type of hose material, type of additives, chemical properties of the food substance flowing through, time and temperature. The additives in the food substances can cause harmful health effects. Besides, they can change organoleptic properties of the product (e.g. taste or smell). Therefore, the requirements for materials intended to come into contact with food focus on:

- permitted amount of specific additives - some of them are completely prohibited;
  - permitted amount of additives released into food simulants - model fluids acting as specific types of food.
- **Not all food grade hoses are suitable for all types of food!**
  - **A hose must be used in accordance with the relevant certificate or hose manufacturer's recommended application (e.g. milk hose, beer and wine hose, hose for fruit juices, hose for oily and fatty foods)!**
  - **It is not only the type of foodstuff that matters, but also its concentration, contact period and temperature!**

### Regulations of the European Union

Regulation 1935/2004/EC	Materials and articles intended to come into contact with food (FCM - Food Contact Materials) - general requirements, adequate labelling of an article, template of declaration of compliance, list of groups of materials and articles, which may be covered by specific measures.	Apply to all food grade hoses.
Regulation 2023/2006/EC	Regulation on good manufacturing practice (GMP) for materials and articles intended to come into contact with food - general guidelines for quality assurance system and quality control system, documentation and rules for the application of printing inks on the surface of the material or article that is not directly in contact with food.	
Regulation 10/2011/EU	Plastic materials and articles intended to come into contact with food: general requirements, list of permitted materials and additives, testing conditions as well as specific migration limits (SML) and overall migration limits, list of food simulants imitating food for migration testing of additives and proper assignment of food simulants to specific types of food, template of declaration of compliance.	Applies to plastic hoses (without rubber or silicone).

symbol	food simulant	food type
A	10 % ethanol	hydrophilic foods* - aqueous foods and non-alcoholic beverages
B	3 % acetic acid	hydrophilic* acidic food (pH < 4.5)
C	20 % ethanol	hydrophilic foods* with an alcohol content of up to 20 % and food of more lipophilic* character
D1	50 % ethanol	lipophilic* foods with an alcohol content of above 20%, milk and dairy products, emulsions
D2	vegetable oil	lipophilic* foods - fats and oils, foods which contain free fats at the surface
E	poly (2, 6-diphenyl-p-phenylene oxide)	dry food

\* - hydrophilic - absorbing or dissolving in water; lipophilic - capable of dissolving in fats, oils.

## INDUSTRIAL HOSES - food

Every food substance can be assigned to a specific food category and imitated during migration testing by a particular food simulant according to the detailed assignment in the table in Regulation 10/2011/EU (for instance: milk requires D1 food simulant, vinegar - B food simulant, ice-cream - C food simulant, and mustard - A, B and D2 food simulants).

### Other regulations and standards for food hoses

FDA (USA)	FDA (Food and Drug Administration) - American food and drug agency. The requirements for materials intended to come into contact with food are defined in Chapter 21 of the Code of Federal Regulations (21 CFR) and include a list of approved materials and additives. Compliance with FDA means a manufacturer's declaration of conformity to this standard and is internationally recognised.	FDA 21 CFR 177.2600 - rubber (migration limits for aqueous foods - point (e), and fatty foods - point (f)); FDA 21 CFR 170-199, 175.300 - PVC and its constituents; FDA 21 CFR 175.105, 177.1680, 177.2600 - polyurethane; FDA 21 CFR 177.1520 - polyethylene, polypropylene; FDA 21 CFR 177.1550 - PTFE and other fluoropolymers.
NSF (USA)	NSF (National Sanitation Foundation) - independent organisation helping protect human health; sets standards regarding finished products based on FDA guidelines, internationally known and recognised.	NSF-51 standard - plastics in food equipment is a basic standard for food hoses as it defines the material requirements and provides specifications regarding appropriate material composition.
3-A (USA)	3-A Sanitary Standards - independent organisation; sets standards for design and monitoring of equipment used in the dairy, food and pharmaceutical industry, which allow maintaining adequate cleanliness, internationally known and recognised.	3-A 18-03 - rubber materials; 3-A 20-27 - plastics; 3-A 62-02 - complete flexible hose assemblies; 3-A 63-03 - hygienic couplings and fittings; P3-A 002 - materials in pharmaceutical processes.
BfR (Germany)	BfR (Bundesinstitut für Risikobewertung) - institute for risk assessment and health protection, makes recommendations regarding materials intended to come into contact with food, including rubber and polymers.	BfR III - polyethylene; BfR XV - silicone; BfR XXI - natural and synthetic rubber.

### Drinking water regulations

Once water is added to food during the production, preparation and processing it becomes a constituent of food substance which is subject to the above requirements concerning materials (including hoses) intended to come into contact with food. Whereas, so called drinking water (i.e. water intended for human consumption) is subject to special regulations. Water intended for human consumption is defined as: water in its original state or after treatment, intended for drinking, cooking, food preparation or other domestic purposes, distributed through a water supply network, supplied by tankers, in containers and bottles, and all water used in food production. Potable water together with its transfer systems and distribution networks (including hoses used for the purpose) are subject to general European regulations (Directive 98/83/EC) and to detailed national regulations.

PZH (Poland)	National Institute of Public Health - National Institute of Hygiene performs mandatory testing and certification for products and materials intended to come into contact with drinking water. State Sanitary Inspection supervises the use of materials and articles for potable water.
KTW DVGW (Germany)	In Germany, plastic materials and articles used in contact with water intended for human consumption must meet the requirements known as KTW (Kunststoffe im Kontakt mit Trinkwasser), which include specifically a list of approved materials and migration limits. In addition, the materials should comply with the requirements of the assessment of microbial growth potential of these materials according to DVGW W270 (DVGW Deutsche Verein des Gas- und Wasserfaches). KTW and DVGW certificates are granted by relevant institutes to be accepted and recognised in many countries.
WRAS (Great Britain)	WRAS (Water Regulations Advisory Scheme) - British organisation setting guidelines and standards for installations, articles and materials used for water. WRAS certificates confirm the compliance of materials and articles with BS standards for drinking water. They are accepted and recognised in many countries.
NSF-61 (USA)	NSF/ANSI Standard 61 - NSF standard concerns installations and products intended for drinking water and their health impact. NSF-61 certificates confirm the compliance of materials and articles with NSF standards and they are accepted and recognised in many countries.

# INDUSTRIAL HOSES - food

## Requirements regarding pharmaceutical industry, biotechnology and medicine

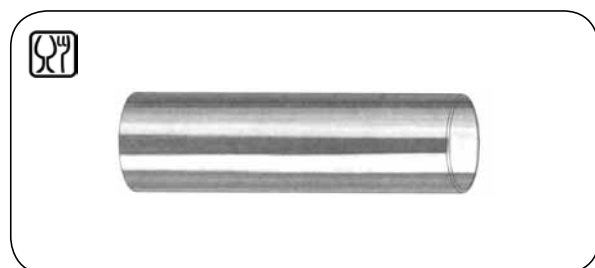
USP Class VI	USP (US Pharmacopoeia) - requirements concerning materials used in the pharmaceuticals industry, biotechnology and medical equipment. USP Class VI is the most stringent requirement, includes tests performed on laboratory animals, but it is not always sufficient for medical application.
ISO 10993	Biological evaluation of medical devices - procedures and requirements concerning medical devices, depending on their category (surface, external or implant devices).

## Assembly of fittings to hoses. Cleaning and sterilisation of food hoses

Fittings intended for food hoses (see "INDUSTRIAL FITTINGS") should be mounted with worm drive clamps or bolt clamps but they can be also crimped with ferrules. The food hoses basically come with AISI 316 stainless steel fittings with inner surface finish of smooth hygienic quality.

The hose (with or without fittings) can be detached from the installation and cleaned separately, by rinsing, using detergents and disinfectants, and if necessary, sterilisation. Apart from the methods above, a procedure of cleaning the whole installation without dismantling is used in the food industry:

CIP	CIP - Cleaning in Place. Instead of food products, rinsing and washing substances flow through the installation in order as follows: water, low percentage alkaline solution, water, low percentage acid solution, water.
SIP	SIP - Sterilization in Place. Saturated steam at about +110°C ÷ 140°C flows through the installation. Temperature, time and number of cycles depend on hygiene requirements (e.g. +121°C for 30 min.) and hose resistance.



## CRISTALLO

**Material:** Transparent PVC

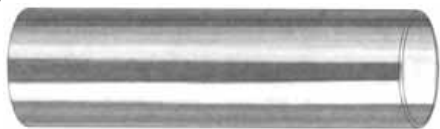
**Working temp.:** From -5°C up to +60°C

General purpose, flexible hose without reinforcement, designed to transfer water, beer, wine, alcohol up to 28%, fruit juices, beverages and slightly aggressive chemicals. Not recommended for food substances containing fat, oil nor dairy products. Meets the requirements of the European Regulation 1935/2004 CE, UE 10/2011 (simulants A, B and C). Also used as a protective cover for pipes, wires etc.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	weight [kg/m]	standard length [m]
ME-CRISTALLO-03X06	3	6	1.5	0.03	200
ME-CRISTALLO-04X06	4	6	1	0.02	200
ME-CRISTALLO-04X07	4	7	1.5	0.03	200
ME-CRISTALLO-05X08	5	8	1.5	0.04	200
ME-CRISTALLO-06X09	6	9	1.5	0.05	200
ME-CRISTALLO-07X10	7	10	1.5	0.05	100
ME-CRISTALLO-08X12	8	12	2	0.08	100
ME-CRISTALLO-10X14	10	14	2	0.10	100
ME-CRISTALLO-12X17	12	17	2.5	0.14	100
ME-CRISTALLO-13X19	13	19	3	0.19	100
ME-CRISTALLO-14X19	14	19	2.5	0.16	100
ME-CRISTALLO-16X22	16	22	3	0.22	100
ME-CRISTALLO-18X25	18	25	3.5	0.29	50
ME-CRISTALLO-20X27	20	27	3.5	0.32	50
ME-CRISTALLO-22X30	22	30	4	0.40	50
ME-CRISTALLO-25X34	25	34	4.5	0.50	50
ME-CRISTALLO-30X40	30	40	5	0.68	30
ME-CRISTALLO-35X45	35	45	5	0.76	30
ME-CRISTALLO-40X50	40	50	5	0.90	30
ME-CRISTALLO-50X60	50	60	5	1.20	30



## INDUSTRIAL HOSES - food



### TUBCLAIR AL

**Material:** Transparent PVC  
**Working temp.:** From -15°C up to +60°C

General purpose, flexible hose without reinforcement, designed to transfer water, beer, wine, alcohol up to 28%, fruit juices, beverages and slightly aggressive chemicals. As hose material is phthalate-free, it is recommended for milk and dairy products as well as alcohol up to 50% and temperature up to +40°C. Not suitable for food substances containing fat and oil. Meets the requirements of the EU Regulations 1935/2004 and 10/2011 (simulants A, B, C and D1). Can be used as a protective cover for pipes, hose assemblies, etc.

code	I.D. [mm]	O.D. [mm]	weight [kg/m]	standard length [m]
TR-TUBCLAIR-03X06	3	6	0.026	50
TR-TUBCLAIR-04X06	4	6	0.019	50
TR-TUBCLAIR-04X07	4	7	0.032	50
TR-TUBCLAIR-05X08	5	8	0.037	50
TR-TUBCLAIR-06X09	6	9	0.043	50
TR-TUBCLAIR-07X10	7	10	0.050	50
TR-TUBCLAIR-08X12	8	12	0.077	50
TR-TUBCLAIR-09X13	9	13	0.082	50
TR-TUBCLAIR-10X14	10	14	0.090	50
TR-TUBCLAIR-12X16	12	16	0.105	50
TR-TUBCLAIR-13X17	13	17	0.112	50
TR-TUBCLAIR-14X18	14	18	0.120	50
TR-TUBCLAIR-15X20	15	20	0.164	50
TR-TUBCLAIR-16X22	16	22	0.215	50
TR-TUBCLAIR-18X23	18	23	0.195	50
TR-TUBCLAIR-19X24	19	24	0.198	50
TR-TUBCLAIR-19X26	19	26	0.290	50
TR-TUBCLAIR-20X26	20	26	0.252	50
TR-TUBCLAIR-22X28	22	28	0.275	50
TR-TUBCLAIR-25X32	25	32	0.380	50
TR-TUBCLAIR-27X33	27	33	0.330	50
TR-TUBCLAIR-30X38	30	38	0.500	50
TR-TUBCLAIR-32X40	32	40	0.545	25
TR-TUBCLAIR-32X42	32	42	0.705	25
TR-TUBCLAIR-35X43	35	43	0.573	25
TR-TUBCLAIR-38X48	38	48	0.789	25
TR-TUBCLAIR-40X50	40	50	0.826	25
TR-TUBCLAIR-50X60	50	60	1.045	25
TR-TUBCLAIR-60X70	60	70	1.200	25

## INDUSTRIAL HOSES - food



### SPIRE ACIER

**Material:** Transparent PVC

**Reinforcement:** Steel wire helix

**Working temp.:** From -15°C up to +60°C

Lightweight, very flexible, suction-delivery hose designed for water, fruit juices, beverages and slightly aggressive chemicals, etc. As hose material is phthalate-free, it is recommended for milk and dairy products as well as alcohol up to 50% and temperature up to +40°C. Not suitable for food substances containing fat and oil. Meets the requirements of the EU Regulations 1935/2004 and 10/2011 (simulants A, B, C and D1).

code	I.D. [mm]	O.D. [mm]	working press. 20°C [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TR-SPIREACIER-008	8	13.4	11	0.9	16	0.15	50
TR-SPIREACIER-010	10	15.5	12	0.85	18	0.16	30
TR-SPIREACIER-012	12	17	11.5	0.85	23	0.19	30
TR-SPIREACIER-014	14	20	11	0.85	26	0.22	30
TR-SPIREACIER-016	16	22	10.5	0.85	30	0.25	30
TR-SPIREACIER-018	18	25	10	0.85	32	0.27	30
TR-SPIREACIER-020	20	27	10	0.85	34	0.33	30
TR-SPIREACIER-025	25	33	9.5	0.8	42	0.51	30
TR-SPIREACIER-030	30	38	9	0.8	50	0.61	30
TR-SPIREACIER-032	32	40	9	0.8	53	0.64	30
TR-SPIREACIER-035	35	44	8	0.8	58	0.73	30
TR-SPIREACIER-038	38	46	7.5	0.8	63	0.78	30
TR-SPIREACIER-040	40	50	7.5	0.8	66	0.92	30
TR-SPIREACIER-045	45	55	6.5	0.8	74	1.12	30
TR-SPIREACIER-050	50	61	6	0.8	82	1.26	30
TR-SPIREACIER-060	60	72	5.5	0.7	130	1.70	30
TR-SPIREACIER-070	70	84	5	0.6	180	2.04	30
TR-SPIREACIER-076	76	90	4	0.6	200	2.23	30
TR-SPIREACIER-080	80	94	3.5	0.6	172	2.43	20
TR-SPIREACIER-090	90	105	3	0.6	192	2.80	20
TR-SPIREACIER-102	102	119	3	0.6	300	3.54	20
TR-SPIREACIER-105	105	122	3	0.6	383	3.73	20
TR-SPIREACIER-110	110	127	2.5	0.6	320	3.83	20
TR-SPIREACIER-120	120	136	2.2	0.5	340	4.14	20
TR-SPIREACIER-150	150	170	2	0.5	450	6.30	20

## INDUSTRIAL HOSES - food



### TRICOCLAIR® AL

**Material:** Transparent PVC  
**Reinforcement:** Polyester reinforcement  
**Working temp.:** From -15°C up to +60°C

Lightweight, very flexible delivery hose designed to transfer water, fruit juices, beverages, slightly aggressive chemicals, etc. As the material of the hose is phthalate-free it is recommended for milk and dairy products as well as alcohol up to 50% and temperature up to +40°C. Not suitable for food substances containing fat and oil. Meets the requirements of the European Regulation UE 1935/2004 i 10/2011 (simulants A, B, C and D1).

code	I.D. [mm]	O.D. [mm]	working pressure 20°C [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TR-TRICOCLAIR-04	4	8	27	11	0.05	25
TR-TRICOCLAIR-06	6	12	20	18	0.10	25
TR-TRICOCLAIR-07	7	13	20	23	0.12	25
TR-TRICOCLAIR-08	8	14	20	27	0.13	25
TR-TRICOCLAIR-09	9	15	20	33	0.14	25
TR-TRICOCLAIR-10	10	16	20	37	0.15	25
TR-TRICOCLAIR-12	12	19	20	45	0.21	25
TR-TRICOCLAIR-13	13	20	20	50.5	0.23	25
TR-TRICOCLAIR-15	15	23	20	60	0.29	25
TR-TRICOCLAIR-19	19	27	20	78.5	0.35	25
TR-TRICOCLAIR-20	20	28	20	85	0.36	25
TR-TRICOCLAIR-25	25	34	16	109.5	0.51	25
TR-TRICOCLAIR-30	30	41	13	138.5	0.74	25
TR-TRICOCLAIR-32	32	42	12	160	0.71	25
TR-TRICOCLAIR-38	38	48	12	210	0.81	25
TR-TRICOCLAIR-40	40	52	10	230	1.08	25
TR-TRICOCLAIR-50	50	64	9	300	1.48	25

## INDUSTRIAL HOSES - food



### SPIRABEL® SNTS

**Material:** Transparent PVC  
**Reinforcement:** Rigid PVC wire helix  
**Working temp.:** From -15°C up to +60°C

Lightweight, very flexible, suction-delivery hose designed for water, fruit juices, beverages and slightly aggressive chemicals, etc. As hose material is phthalate-free, it is recommended for milk and dairy products as well as alcohol up to 50% and temperature up to +40°C. Not suitable for food substances containing fat and oil. Meets the requirements of the EU Regulations 1935/2004 and 10/2011 (simulants A, B, C and D1).

code	I.D. [mm]	O.D. [mm]	working press. 20°C [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TR-SPIRABEL-020	20	25.2	7	0.8	60	0.25	25
TR-SPIRABEL-025	25	30.4	7	0.8	75	0.31	25
TR-SPIRABEL-030	30	35.4	6	0.8	90	0.37	25
TR-SPIRABEL-032	32	37.6	6	0.8	95	0.40	25
TR-SPIRABEL-035	35	41	6	0.8	105	0.48	25
TR-SPIRABEL-038	38	44	6	0.8	115	0.51	25
TR-SPIRABEL-040	40	46	6	0.8	120	0.53	25
TR-SPIRABEL-045	45	51.2	5	0.8	135	0.62	25
TR-SPIRABEL-050	50	56.6	5	0.8	150	0.75	25
TR-SPIRABEL-055	55	61.6	5	0.8	165	0.80	25
TR-SPIRABEL-060	60	66.6	5	0.8	180	0.89	25
TR-SPIRABEL-063	63	69.6	5	0.8	190	0.97	25
TR-SPIRABEL-070	70	76.8	4	0.7	210	1.06	25
TR-SPIRABEL-075	75	81.8	3	0.7	300	1.20	25
TR-SPIRABEL-080	80	86.8	3	0.7	320	1.35	25
TR-SPIRABEL-090	90	96.8	3	0.7	360	1.65	25
TR-SPIRABEL-100	100	106.8	3	0.7	500	1.97	25
TR-SPIRABEL-110	110	116.8	3	0.6	550	2.31	25
TR-SPIRABEL-120	120	126.8	3	0.6	600	2.54	25
TR-SPIRABEL-151	151	156.8	3	0.6	755	4.20	25



### AVOID PROBLEMS!!!

**We supply certified food hoses with hygienic fittings according to Customer specification.**

## INDUSTRIAL HOSES - food



### LUISIANA

**Material:** Transparent PVC  
**Reinforcement:** Rigid PVC wire helix  
**Working temp.:** From -5°C up to +60°C

Lightweight, flexible suction-delivery hose designed to transfer water, beer, wine, alcohol up to 28%, fruit juices, beverages and slightly aggressive chemicals. Not recommended for food substances containing fat, oil nor for dairy products. Meets the requirements of the European Regulation 1935/2004 CE, UE 10/2011 (simulants A, B and C). Version with antistatic wire also available.

code	I.D. [mm]	wall thickness [mm]	working press. 20°C [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
ME-LUISIANA-020	20	3.1	8	0.7	75	0.28	50
ME-LUISIANA-025	25	3.3	8	0.7	120	0.33	50
ME-LUISIANA-030	30	3.5	7	0.7	140	0.42	50
ME-LUISIANA-032	32	3.6	7	0.7	150	0.46	50
ME-LUISIANA-035	35	3.4	7	0.7	160	0.50	50
ME-LUISIANA-038	38	3.7	6.5	0.7	170	0.55	50
ME-LUISIANA-040	40	3.8	6.5	0.7	180	0.61	50
ME-LUISIANA-045	45	3.7	6.5	0.7	200	0.67	50
ME-LUISIANA-050	50	4.1	6	0.7	220	0.81	50
ME-LUISIANA-060	60	4.5	5	0.7	270	0.97	50
ME-LUISIANA-063	63	4	5	0.7	290	1.04	50
ME-LUISIANA-070	70	4.6	4	0.7	320	1.20	50
ME-LUISIANA-075	75	5.2	4	0.7	350	1.38	50
ME-LUISIANA-080	80	5.3	4	0.7	360	1.56	25
ME-LUISIANA-090	90	5.2	4	0.7	430	1.80	25
ME-LUISIANA-100	100	6	4	0.7	480	2.16	25
ME-LUISIANA-102	102	6.2	4	0.7	480	2.20	25
ME-LUISIANA-110	110	6	4	0.6	530	2.40	25
ME-LUISIANA-120	120	6.2	3	0.6	680	2.85	25
ME-LUISIANA-125	125	6.3	3	0.6	730	3.13	25
ME-LUISIANA-150	150	7.2	3	0.5	810	4.25	25
ME-LUISIANA-200	200	9.1	2	0.5	900	6.40	10

## INDUSTRIAL HOSES - food



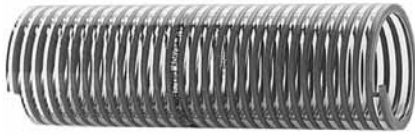
### ALIFLEX

**Material:** Transparent PVC  
**Reinforcement:** Rigid PVC wire helix  
**Working temp.:** From -20°C up to +50°C

Lightweight, flexible, suction-delivery hose designed to transfer water, beer, wine, alcohol up to 28%, fruit juices, beverages and slightly aggressive chemicals. Not recommended for food substances containing fat, oil nor for dairy products. Meets the requirements of the European Directive UE 1935/2004 i 10/2011 (simulants A, B and C).

code	I.D. [mm]	wall thickness [mm]	working press. 20°C [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
FT-ALIFLEX-013	13	2.4	7	0.6	90	0.14	25
FT-ALIFLEX-020	20	2.7	7	0.6	110	0.20	25
FT-ALIFLEX-025	25	2.8	7	0.6	140	0.28	25
FT-ALIFLEX-030	30	3	7	0.6	175	0.35	25
FT-ALIFLEX-032	32	3	7	0.6	180	0.37	25
FT-ALIFLEX-035	35	3.1	7	0.6	190	0.43	25
FT-ALIFLEX-038	38	3.4	6	0.6	210	0.47	25
FT-ALIFLEX-040	40	3.5	6	0.6	220	0.51	25
FT-ALIFLEX-045	45	3.5	6	0.6	250	0.57	25
FT-ALIFLEX-051	51	3.8	6	0.6	280	0.73	25
FT-ALIFLEX-055	55	4	6	0.6	300	0.80	25
FT-ALIFLEX-060	60	4.1	6	0.6	350	0.90	25
FT-ALIFLEX-063	63	4.2	5	0.6	370	0.97	25
FT-ALIFLEX-070	70	4.4	5	0.6	420	1.13	25
FT-ALIFLEX-076	76	4.5	5	0.6	500	1.27	25
FT-ALIFLEX-080	80	4.6	4	0.6	550	1.45	25
FT-ALIFLEX-090	90	5	4	0.5	600	1.70	25
FT-ALIFLEX-100	100	5.2	4	0.5	650	1.95	25
FT-ALIFLEX-110	110	5.4	3	0.5	700	2.10	25
FT-ALIFLEX-120	120	5.4	3	0.5	730	2.60	25
FT-ALIFLEX-125	125	5.6	3	0.5	750	2.90	25
FT-ALIFLEX-150	150	6.4	2	0.5	850	3.90	25

## INDUSTRIAL HOSES - food



### NEVADA PHF

**Material:** Transparent PVC  
**Reinforcement:** Rigid PVC wire helix  
**Working temp.:** From -5°C up to +60°C

Lightweight, flexible suction-delivery hose designed to transfer water, beer, wine, alcohol up to 28%, fruit juices, beverages and slightly aggressive chemicals. Not recommended for food substances containing fat, oil nor for dairy products. Meets the requirements of the European Regulation 1935/2004 CE, UE 10/2011 (simulants A, B and C).

code	I.D. [mm]	wall thickness [mm]	working press. 20°C [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
ME-NEVADA-PHF-025	25	3.8	8	0.9	175	0.40	50
ME-NEVADA-PHF-030	30	3.8	8	0.9	210	0.50	50
ME-NEVADA-PHF-032	32	4	8	0.9	220	0.52	50
ME-NEVADA-PHF-035	35	4	8	0.9	240	0.60	50
ME-NEVADA-PHF-038	38	4.2	8	0.9	250	0.70	50
ME-NEVADA-PHF-040	40	4.5	8	0.9	260	0.75	50
ME-NEVADA-PHF-045	45	4.5	8	0.9	290	0.90	50
ME-NEVADA-PHF-050	50	4.5	8	0.9	325	1.00	50
ME-NEVADA-PHF-060	60	5.5	7	0.9	380	1.45	50
ME-NEVADA-PHF-063	63	6	7	0.9	400	1.67	50
ME-NEVADA-PHF-070	70	6	6	0.9	450	1.80	50
ME-NEVADA-PHF-075	75	6	6	0.9	490	1.90	50
ME-NEVADA-PHF-080	80	6.5	5	0.9	530	2.20	50
ME-NEVADA-PHF-090	90	7	5	0.9	600	2.48	30
ME-NEVADA-PHF-100	100	8	4	0.9	700	3.30	30
ME-NEVADA-PHF-102	102	8	4	0.9	700	3.30	30
ME-NEVADA-PHF-110	110	8	4	0.9	800	3.45	30
ME-NEVADA-PHF-120	120	8	4	0.9	900	3.60	30
ME-NEVADA-PHF-125	125	8.5	4	0.9	980	4.20	30
ME-NEVADA-PHF-150	150	10	3	0.9	1350	6.30	30

## INDUSTRIAL HOSES - food



### ARMORVIN PRESS

**Material:** Transparent PVC  
**Reinforcement:** Steel wire helix  
**Working temp.:** From -5°C up to +65°C

Robust, very flexible suction-delivery hose designed to transfer air, water, slightly aggressive chemicals, beer, wine, alcohol up to 28%, fruit juices, beverages, drinking water, other liquid and semi-liquid food substances. Not recommended for food substances containing fat, oil nor for dairy products. Meets the requirements of the European Regulation 1935/2004 CE, UE 10/2011 (simulants A, B and C).

code	I.D. [mm]	wall thickness [mm]	working press. 20°C [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
ME-ARMPRE-05	5	2.5	20	0.9	20	0.08	60
ME-ARMPRE-06	6	2.5	18	0.9	23	0.10	60
ME-ARMPRE-08	8	2.7	16	0.9	32	0.14	60
ME-ARMPRE-10	10	3	15	0.9	40	0.18	60
ME-ARMPRE-12	12	3	15	0.9	45	0.21	60
ME-ARMPRE-14	14	3.2	12	0.9	56	0.26	60
ME-ARMPRE-16	16	3.5	12	0.9	63	0.29	60
ME-ARMPRE-18	18	3.5	10	0.9	70	0.34	60
ME-ARMPRE-20	20	3.5	10	0.9	80	0.37	60



### ARMORVIN HNA

**Material:** Transparent PVC  
**Reinforcement:** Steel wire helix  
**Working temp.:** From -5°C up to +65°C

Very flexible suction-delivery hose designed to transfer air, water, beer, wine, alcohol up to 28%, fruit juices, beverages and slightly aggressive chemicals. Not recommended for food substances containing fat, oil nor for dairy products. Meets the requirements of the European Regulation 1935/2004 CE, UE 10/2011 (simulants A, B and C).

code	I.D. [mm]	wall thickness [mm]	working press. 20°C [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
ME-ARMHNA-010	10	3	7	0.85	20	0.16	60
ME-ARMHNA-012	12	3	7	0.85	25	0.18	60
ME-ARMHNA-014	14	3.2	6	0.85	30	0.20	60
ME-ARMHNA-016	16	3.2	6	0.85	35	0.23	60
ME-ARMHNA-018	18	3.2	6	0.85	40	0.28	60
ME-ARMHNA-020	20	3.4	5	0.85	50	0.34	60
ME-ARMHNA-022	22	3.6	5	0.85	55	0.36	60
ME-ARMHNA-025	25	4	5	0.85	60	0.51	60
ME-ARMHNA-030	30	4.2	4.5	0.85	70	0.60	60
ME-ARMHNA-032	32	4.2	4.5	0.85	75	0.65	60
ME-ARMHNA-035	35	4.5	4	0.85	80	0.73	60
ME-ARMHNA-038	38	4.5	4	0.85	90	0.80	30
ME-ARMHNA-040	40	4.7	3	0.85	95	0.87	30
ME-ARMHNA-045	45	5	3	0.8	110	1.10	30
ME-ARMHNA-050	50	5	3	0.8	125	1.20	30
ME-ARMHNA-060	60	6	2.5	0.8	140	1.80	30
ME-ARMHNA-075	75	6.8	2	0.7	200	2.50	30
ME-ARMHNA-080	80	7	2	0.7	220	2.70	30
ME-ARMHNA-100	100	7	2	0.7	300	3.25	30



## INDUSTRIAL HOSES - food



### ARMORVIN HNP

**Material:** Light green, transparent PVC

**Reinforcement:** Steel wire helix

**Working temp.:** From -5°C up to +65°C

Very flexible suction-delivery hose designed to transfer air, water, beer, wine, alcohol up to 28%, fruit juices, beverages and slightly aggressive chemicals. Not recommended for food substances containing fat, oil nor for dairy products. Meets the requirements of the European Regulation 1935/2004 CE, UE 10/2011 (simulants A, B and C). It is suitable for vacuum transfer of loose substances, granulated products and many other slightly abrasive materials.

code	I.D. [mm]	wall thickness [mm]	working press. 20°C [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
ME-ARMHNP-010	10	3	8	0.95	20	0.16	60
ME-ARMHNP-012	12	3	8	0.95	25	0.18	60
ME-ARMHNP-014	14	3	8	0.95	30	0.20	60
ME-ARMHNP-016	16	3	8	0.95	35	0.23	60
ME-ARMHNP-018	18	3.2	7	0.95	40	0.28	60
ME-ARMHNP-020	20	3.5	7	0.95	50	0.34	60
ME-ARMHNP-022	22	3.5	6	0.95	55	0.36	60
ME-ARMHNP-025	25	4	6	0.95	60	0.51	60
ME-ARMHNP-030	30	4.7	5	0.95	70	0.68	60
ME-ARMHNP-032	32	4.7	5	0.95	75	0.73	60
ME-ARMHNP-035	35	4.5	5	0.95	80	0.73	60
ME-ARMHNP-038	38	5.5	5	0.95	90	0.95	30
ME-ARMHNP-040	40	6.5	5	0.95	100	1.22	30
ME-ARMHNP-045	45	6.5	5	0.95	110	1.40	30
ME-ARMHNP-050	50	7	5	0.9	125	1.60	30
ME-ARMHNP-060	60	7	5	0.9	140	2.05	30
ME-ARMHNP-063	63	7	4	0.9	150	2.25	30
ME-ARMHNP-070	70	8	4	0.9	180	2.60	30
ME-ARMHNP-075	75	8	4	0.9	200	2.85	30
ME-ARMHNP-080	80	8	3	0.9	220	3.15	30
ME-ARMHNP-090	90	8.5	3	0.9	260	3.75	30
ME-ARMHNP-100	100	9	3	0.9	300	4.40	30
ME-ARMHNP-105	105	8.5	3	0.9	310	3.90	20
ME-ARMHNP-110	110	9	3	0.9	320	4.65	20
ME-ARMHNP-120	120	9	2	0.9	340	5.20	20
ME-ARMHNP-125	125	9.5	2	0.9	350	5.40	20
ME-ARMHNP-150	150	9.5	2	0.9	450	7.20	20

## INDUSTRIAL HOSES - food

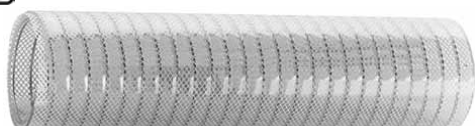


### SPIRABEL® RS

**Material:** Transparent PVC  
**Reinforcement:** Rigid PVC wire helix  
**Working temp.:** From -25°C up to +60°C

Lightweight, very flexible, suction-delivery hose designed for water, fruit juices, beverages and slightly aggressive chemicals, etc. As hose material is phthalate-free, it is recommended for milk and dairy products as well as alcohol up to 50% and temperature up to +40°C. Not suitable for food substances containing fat and oil. Meets the requirements of the EU Regulations 1935/2004 and 10/2011 (simulants A, B, C and D1).

code	I.D. [mm]	O.D. [mm]	working press. 20°C [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TR-SPIRABEL-RS-040	40	48.6	7	0.9	144	0.70	25
TR-SPIRABEL-RS-050	50	59.4	7	0.9	175	1.02	25
TR-SPIRABEL-RS-060	60	69.6	6	0.9	210	1.26	25
TR-SPIRABEL-RS-063	63	73.6	6	0.9	220	1.35	25
TR-SPIRABEL-RS-070	70	81	6	0.9	245	1.60	25
TR-SPIRABEL-RS-080	80	91.4	5	0.9	280	1.80	25
TR-SPIRABEL-RS-100	100	114	5	0.9	350	2.62	25
TR-SPIRABEL-RS-120	120	136.4	5	0.8	420	3.50	25



### PHARMASTEEL PRESS

**Material:** Transparent TPE  
**Reinforcement:** AISI 302 steel wire helix, polyester braid  
**Working temp.:** From -30°C up to +125°C

Very flexible, suction-delivery hose designed to transfer air, water, slightly aggressive chemicals, fruit juices, milk and dairy products, beer, wine, alcohol up to 96%. Resistant to fats and oils. Used in cosmetic and pharmaceutical industry to transfer soap, cream, perfume, etc. Meets the requirements of EU Regulation 10/2011 and 2023/2006 (simulants A, B, C, D1, D2) for food industry. Complies with FDA (Title 21 CFR 177.2600 „e”) and USP CLASS VI pharmaceutical standard. Resistant to hydrolysis, impairs bacterial growth. Hose cleaning, disinfection or sterilisation strictly according to the handling manual. It is not recommended to clean using SIP method as it severely shortens the hose life.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IP-PHARMASTEELPR-013	13	23.5	17	0.98	65	0.31	60
IP-PHARMASTEELPR-020	20	32	13	0.98	100	0.49	60
IP-PHARMASTEELPR-025	25	37.5	12	0.98	125	0.64	60
IP-PHARMASTEELPR-032	32	44	11	0.88	160	0.75	60
IP-PHARMASTEELPR-038	38	51	10	0.88	190	0.94	30
IP-PHARMASTEELPR-050	50.5	65	10	0.78	250	1.48	30
IP-PHARMASTEELPR-063	63	79	10	0.78	315	1.95	30
IP-PHARMASTEELPR-076	76	91	9	0.69	380	2.11	30
IP-PHARMASTEELPR-102	102	118	7	0.69	510	3.02	20

## INDUSTRIAL HOSES - food



### PHARMAPRESS

**Material:** Transparent TPE  
**Reinforcement:** Polyester braid  
**Working temp.:** From -30°C up to +125°C

Very flexible, suction-delivery hose designed to transfer air, water, slightly aggressive chemicals, fruit juices, milk and dairy products, beer, wine, alcohol up to 96%. Resistant to fats and oils. Used in cosmetic and pharmaceutical industry to transfer soap, cream, perfume, etc. Meets the requirements of EU Regulation 10/2011 and 2023/2006 (simulants A, B, C, D1, D2) for food industry. Complies with FDA (Title 21 CFR 177.2600 „e”) and USP CLASS VI pharmaceutical standard. Resistant to hydrolysis, impairs bacterial growth. Hose cleaning, disinfection or sterilisation strictly according to the handling manual. It is not recommended to clean using SIP method as it severely shortens the hose life.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IP-PHARMAPRESS-06	6.4	12.6	12	40	0.08	100
IP-PHARMAPRESS-08	7.9	14.6	15	60	0.11	100
IP-PHARMAPRESS-10	9.5	16.3	14	70	0.13	100
IP-PHARMAPRESS-13	12.7	20.1	10	90	0.18	100
IP-PHARMAPRESS-16	15.9	24.4	9	110	0.25	50
IP-PHARMAPRESS-19	19	27.9	9	130	0.30	50
IP-PHARMAPRESS-25	25.4	34.5	7	180	0.39	50



### PHARMASTEEL

**Material:** Transparent TPE  
**Reinforcement:** AISI 302 steel wire helix  
**Working temp.:** From -30°C up to +125°C

Very flexible, suction-delivery hose designed to transfer air, water, slightly aggressive chemicals, fruit juices, milk and dairy products, beer, wine, alcohol up to 96%. Resistant to fats and oils. Used in cosmetic and pharmaceutical industry to transfer soap, cream, perfume, etc. Meets the requirements of EU Regulation 10/2011 and 2023/2006 (simulants A, B, C, D1, D2) for food industry. Complies with FDA (Title 21 CFR 177.2600 „e”) and USP CLASS VI pharmaceutical standard. Resistant to hydrolysis, impairs bacterial growth. Hose cleaning, disinfection or sterilisation strictly according to the handling manual. It is not recommended to clean using SIP method as it severely shortens the hose life.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IP-PHARMASTEEL-13	13	19	2.7	0.83	60	0.17	60
IP-PHARMASTEEL-16	16	22.4	2.3	0.83	70	0.22	60
IP-PHARMASTEEL-19	19	26	2.3	0.83	90	0.27	60
IP-PHARMASTEEL-25	25	33	1.5	0.83	110	0.40	60
IP-PHARMASTEEL-32	32	40.4	1.5	0.83	140	0.52	60
IP-PHARMASTEEL-38	38	47	1.2	0.83	170	0.64	30
IP-PHARMASTEEL-51	51	61	1	0.78	230	1.05	30

## INDUSTRIAL HOSES - food



### VACUPRESS CRISTAL

**Internal layer:** Transparent PVC  
**Reinforcement:** Polyester braid, steel wire helix  
**External layer:** Transparent PVC  
**Working temp.:** From -5°C up to +65°C

Heavy duty, flexible, suction-delivery hose resistant to abrasion (according to ISO 4649: 90 mm<sup>3</sup>). Designed to transfer water, beer, wine, alcohol to 28%, fruit juices, beverages and slightly aggressive chemicals. Not recommended for food substances containing fat, oil nor for dairy products. Meets the requirements of the European Regulation 1935/2004 CE, UE 10/2011 (simulants A, B and C).

code	I.D. [mm]	O.D. [mm]	working press. 20°C [bar]	bursting press. 20°C [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
ME-VACUPRCR-019	19	28	20	60	0.9	80	0.45	60
ME-VACUPRCR-025	25	35.5	20	60	0.9	90	0.64	60
ME-VACUPRCR-030	30	40.5	16	48	0.9	105	0.77	60
ME-VACUPRCR-032	32	42.5	16	48	0.9	110	0.80	60
ME-VACUPRCR-035	35	48	14	42	0.9	125	1.10	60
ME-VACUPRCR-038	38	51	14	42	0.9	135	1.15	30
ME-VACUPRCR-040	40	53	14	42	0.9	140	1.20	30
ME-VACUPRCR-045	45	58	14	42	0.9	155	1.40	30
ME-VACUPRCR-050	50	63	14	42	0.9	170	1.60	30
ME-VACUPRCR-060	60	74	12	36	0.9	200	1.98	30
ME-VACUPRCR-063	63	77	12	36	0.9	210	2.05	30
ME-VACUPRCR-076	76	92	12	36	0.9	250	2.80	30
ME-VACUPRCR-080	80	96	10	30	0.9	300	2.85	30
ME-VACUPRCR-090	90	106.5	10	30	0.9	350	3.30	30
ME-VACUPRCR-102	102	119	10	30	0.9	400	3.90	30



### PROFILINE AQUA PLUS

**Internal layer:** XLPE polyethylene  
**Reinforcement:** Synthetic braid  
**External layer:** Blue PE polyethylene  
**Working temp.:** From -15°C up to +50°C

Very flexible delivery hose designed to transfer food substances. As the material of the hose is phthalate-free it is recommended for milk and dairy products as well as alcohol. Meets the requirements of the European Regulation 1935/2004/EC and 10/2011/EU (simulants A, B, C and D1 and D2). Compliant with KTW-A and DVGW W270. Widely used in food industry, drinking water applications and chemical industry.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TR-PROFIAQUAPLUS-10	10	15	20	35	0.09	50
TR-PROFIAQUAPLUS-13	13	20	20	70	0.17	50
TR-PROFIAQUAPLUS-19	19	27	20	107.5	0.26	50
TR-PROFIAQUAPLUS-25	25	34.5	20	147.5	0.42	50

## INDUSTRIAL HOSES - food



### AQUABLUER®

**Internal layer:** White plastomer  
**Reinforcement:** Synthetic braid  
**External layer:** Blue synthetic rubber  
**Working temp.:** From -30°C up to +60°C

Delivery hose designed to transfer drinking water in food industry and other applications (household, camping, etc.). Completely odour-free, taste-free, food grade material of the internal hose layer allows to maintain organoleptic water properties unaltered. Compliant with FDA 21CFR 177.1520, BfR III, D. M. 174. Approved by WRAS according to BS 6920 and AZ/NS 4020. Meets the requirements of KTW-C, tested according to DVGWW270. Cleaning with steam (+130°C) for 15 minutes.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-AQUABLUER-13	13	21	20	60	0.26	60
IV-AQUABLUER-19	19	28	20	60	0.42	60
IV-AQUABLUER-25	25	34	20	60	0.52	60
IV-AQUABLUER-32	32	43	20	60	0.85	60
IV-AQUABLUER-38	38	51	20	60	1.11	60
IV-AQUABLUER-50	50	65	20	60	1.73	60



### FOODSTAR / SD

**Internal layer:** White NBR/PVC rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Blue EPDM rubber  
**Working temp.:** From -25°C up to +100°C

Suction-delivery hose designed to transfer foodstuffs which demand application of completely odour-free and taste-free rubber. Internal layer compliant with FDA 21 CFR 177.2600, EU Regulations EC 1935/04 and 1012/06. Highly recommended for milk and dairy products transfer. Cleaning for a few minutes with: steam at max. +110°C, 1% peracetic acid at max.+50°C, 2% phosphoric acid at max.+50°C, 5% sodium hydroxide at +50°C. Vacuum 0.9 bar.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SO-FOODSTAR-SD-025	25	35	10	30	125	0.74	60
SO-FOODSTAR-SD-032	32	42	10	30	160	0.91	60
SO-FOODSTAR-SD-038	38	49	10	30	190	1.11	60
SO-FOODSTAR-SD-040	40	51	10	30	200	1.15	60
SO-FOODSTAR-SD-045	45	56	10	30	225	1.28	60
SO-FOODSTAR-SD-051	51	62	10	30	255	1.44	60
SO-FOODSTAR-SD-063	63	76	10	30	381	2.21	60
SO-FOODSTAR-SD-076	76	89	10	30	456	2.76	60
SO-FOODSTAR-SD-080	80	93	10	30	480	2.89	60
SO-FOODSTAR-SD-102	102	116.5	10	30	612	4.25	60

## INDUSTRIAL HOSES - food



### SCOTLAND NR®

**Internal layer:** White NR rubber  
**Reinforcement:** Synthetic braid  
**External layer:** Blue EPDM rubber  
**Working temp.:** From -25°C up to +80°C

Delivery hose designed to transfer foodstuffs which demand application of totally odour-free and taste-free rubber. Highly recommended for milk and dairy products transfer. Very flexible, lightweight construction makes it easy to handle. Internal layer is compliant with FDA 21 CFR 177.2600, BfR XXI cat.2, D. M. 21/03/73, EC 1935/04 and 2023/06. Cleaning for a few minutes with: steam (+110°C), 1% peracetic acid (+30°C), 2% phosphoric acid (+30°C), 5% sodium hydroxide (+30°C).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-SCOT-NR-019	19	27	6	18	0.35	60
IV-SCOT-NR-025	25	34	6	18	0.53	60
IV-SCOT-NR-032	32	42	6	18	0.75	60
IV-SCOT-NR-038	38	48	6	18	0.87	60
IV-SCOT-NR-051	51	61	6	18	1.14	60
IV-SCOT-NR-063	63.5	75.5	6	18	1.66	60
IV-SCOT-NR-076	76	88	6	18	1.99	60



### SCOTLAND / LL NR®

**Internal layer:** White NR rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Blue EPDM rubber  
**Working temp.:** From -25°C up to +80°C

Suction-delivery hose designed to transfer foodstuffs which demand application of entirely odour-free and taste-free rubber. Highly recommended for milk and dairy products transfer. Very flexible, lightweight construction makes it easy to handle. Internal layer compliant with FDA 21 CFR 177.2600, BfR XXI cat.2, D. M. 21/03/73, EC 1935/04 and 2023/06. Cleaning for a few minutes with: steam (+110°C), 1% peracetic acid (+30°C), 2% phosphoric acid (+30°C), 5% sodium hydroxide (+30°C). Vacuum 0.9 bar.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-SCOT-LL-NR-019	19	30	6	18	85	0.69	60
IV-SCOT-LL-NR-025	25	36	6	18	112	0.88	60
IV-SCOT-LL-NR-032	32	43	6	18	144	1.07	60
IV-SCOT-LL-NR-038	38	49	6	18	171	1.24	60
IV-SCOT-LL-NR-040	40	51	6	18	180	1.30	60
IV-SCOT-LL-NR-051	51	62	6	18	255	1.69	60
IV-SCOT-LL-NR-063	63.5	76.5	6	18	315	2.40	60
IV-SCOT-LL-NR-076	76	88	6	18	380	2.71	60
IV-SCOT-LL-NR-080	80	94	6	18	440	3.23	60

## INDUSTRIAL HOSES - food



### MASTERMILK / SD

**Internal layer:** White NBR rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Blue synthetic rubber  
**Working temp.:** From -20°C up to +90°C (for steam cleaning up to +130°C max. 30 min.)

Suction-delivery hose designed to transfer fatty and non-fatty foodstuffs which demand application of totally odour-free and taste-free rubber. Meets the requirements of FDA, BfR, M.D. 21/03/73 and RAL. Compliant with EC 1935/2004 and EC 2023/2006. Free of plasticizers, phthalates and materials of animal origin (according to EC 1907/2006 REACH). Internal layer is resistant to cleaning agents and cleaning processes used in the food industry. External layer is resistant to brief contact with animal fats and vegetable oils. Not suitable for suction or discharge at pulsating pressure. Vacuum 0.9 bar.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
MT-MASTERMILK-SD-019	19	30	10	30	50	0.60	40
MT-MASTERMILK-SD-025	25	36	10	30	75	0.74	40
MT-MASTERMILK-SD-032	32	43	10	30	80	0.90	40
MT-MASTERMILK-SD-038	38	50	10	30	110	1.20	40
MT-MASTERMILK-SD-040	40	52	10	30	120	1.25	40
MT-MASTERMILK-SD-045	45	57	10	30	130	1.50	40
MT-MASTERMILK-SD-050	50	62	10	30	150	1.55	40
MT-MASTERMILK-SD-065	65	78	10	30	190	2.20	40
MT-MASTERMILK-SD-075	75	89	10	30	220	2.55	40
MT-MASTERMILK-SD-100	100	115	10	30	500	4.25	40



### EVOLUTION / CRUSH-PROOF

**Internal layer:** White NR/NBR rubber  
**Reinforcement:** Synthetic braid, plastic wire helix  
**External layer:** Blue synthetic rubber  
**Working temp.:** From -30°C up to +85°C (for steam cleaning up to +120°C max. 30 min.)

Suction- delivery hose designed to transfer milk, dairy products and foodstuffs which demand application of entirely odour-free and taste-free rubber. Internal layer meets the requirements of FDA, BfR, M.D. 21/03/73 and RAL. Complies with EC 1935/2004 and EC 2023/2006. Free of plasticizers, phthalates and materials of animal origin (according to EC 1907/2006 REACH). The internal layer is resistant to cleaning agents and cleaning processes used in the food industry. Non-oxidising cleaning agents are recommended. Due to the special „CRUSH PROOF“ construction, the hose regains its initial shape after it is e.g. accidentally run over by a forklift. Because of the plastic wire helix, the hose is significantly lighter and much easier to handle. Particularly recommended for applications which require high flexibility and small bending radius. Remains flexible even at very low temperatures. Vacuum 0.7 bar.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
MT-EVOLUTION-CP-038	38	51	6	18	120	1.10	40
MT-EVOLUTION-CP-051	51	64	6	18	150	1.39	40
MT-EVOLUTION-CP-063	63.5	77.5	6	18	190	1.85	40
MT-EVOLUTION-CP-076	76	91	6	18	230	2.25	40

## INDUSTRIAL HOSES - food



### IMPERIA / SPL / 10

**Internal layer:** White NBR rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Blue CR rubber  
**Working temp.:** From -20°C up to +90°C

Suction-delivery hose designed to transfer milk, dairy products and fatty foodstuffs in discharge applications. Particularly recommended for heavy-duty service conditions. Meets the requirements of FDA, BfR, M.D. 21/03/73 and RAL. Compliant with EC 1935/2004 and EC 2032/2006. Free of plasticizers, phthalates and materials of animal origin (according to EC 1907/2006 REACH). Internal layer is resistant to cleaning agents and cleaning processes used in the food industry. External layer is resistant to brief contact with animal fats and vegetable oils. Vacuum 0.9 bar.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
MT-IMPERIA-SPL10-019	19	31	10	30	80	0.69	40
MT-IMPERIA-SPL10-025	25	37	10	30	120	0.85	40
MT-IMPERIA-SPL10-032	32	44	10	30	150	1.04	40
MT-IMPERIA-SPL10-038	38	52	10	30	200	1.56	40
MT-IMPERIA-SPL10-040	40	54	10	30	200	1.62	40
MT-IMPERIA-SPL10-045	45	59	10	30	225	1.78	40
MT-IMPERIA-SPL10-050	50	64	10	30	250	1.95	40
MT-IMPERIA-SPL10-065	65	81	10	30	360	2.93	40
MT-IMPERIA-SPL10-075	75	93	10	30	450	3.82	40
MT-IMPERIA-SPL10-100	100	118	10	30	600	5.20	40



### SUPERTOP / LL FOOD UPE®

**Internal layer:** White UPE polyethylene  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Blue EPDM rubber  
**Working temp.:** From -30°C up to +100°C

Suction-delivery hose designed to transfer liquid chemicals. Widely used in food, chemical and petrochemical industry. The hose has copper wire to ensure electrical conductivity. External layer is resistant to weather conditions and abrasion. Meets the requirements of FDA 21 CFR 177.1520. Complies with EN 12115:11. Cleaning for a few minutes with: steam (+130°C), 2% nitric acid (+60°C), 2% peracetic acid (+60°C), 2% phosphoric acid (+60°C), 5% sodium hydroxide (+60°C). Vacuum 0.9 bar.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-SUPUPE-LL-F-019	19	31.5	16	64	152	0.78	60
IV-SUPUPE-LL-F-025	25	37	16	64	200	0.98	60
IV-SUPUPE-LL-F-038	38	53	16	64	304	1.61	60
IV-SUPUPE-LL-F-051	51	66.5	16	64	408	2.20	60
IV-SUPUPE-LL-F-063	63.5	79	16	64	508	2.73	60
IV-SUPUPE-LL-F-076	76	91	16	64	608	3.22	60



## INDUSTRIAL HOSES - food



### SCOTLAND BE®

**Internal layer:** White butyl rubber (IIR)  
**Reinforcement:** Synthetic braid  
**External layer:** Red butyl rubber (IIR)  
**Working temp.:** From -40°C up to +120°C

Delivery hose designed to transfer wine, beer, fruit juices and other foodstuffs (with no fat content), which demand application of odour-free and taste-free rubber. Widely used in the distillery industry to transfer alcohol up to 96%. The hose has a copper wire to ensure electrical conductivity between the hose ends. Internal layer complies with FDA 21 CFR 177.2600, BfR XXI cat.2, D. M. 21/03/73, EC 1935/04 and EC 2023/06. Cleaning for a few minutes with: steam (+130°C), 2% nitric acid (+60°C), 2% peracetic acid (+60°C), 2% phosphoric acid (+60°C), 5% sodium hydroxide (+60°C).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-SCOT-BE-019	19	29	10	30	0.48	60
IV-SCOT-BE-025	25	38	10	30	0.81	60
IV-SCOT-BE-032	32	48	10	30	1.26	60
IV-SCOT-BE-038	38	56	10	30	1.67	60
IV-SCOT-BE-051	51	69	10	30	2.15	60
IV-SCOT-BE-063	63.5	83.5	10	30	2.88	60
IV-SCOT-BE-076	76	96	10	30	3.27	60
IV-SCOT-BE-102	102	124	10	30	4.96	60



### SCOTLAND / LL BE®

**Internal layer:** White butyl rubber (IIR)  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Red butyl rubber (IIR)  
**Working temp.:** From -40°C up to +120°C

Suction-delivery hose designed to transfer wine, beer, fruit juices and other foodstuffs (with no fat content), which demand application of odour-free and taste-free rubber. Widely used in the distillery industry to transfer alcohol up to 96%. The hose has a copper wire to ensure electrical conductivity between the hose ends. Internal layer complies with FDA 21 CFR 177.2600, BfR XXI cat.2, D. M. 21/03/73, EC 1935/04 and EC 2023/06. Cleaning for a few minutes with: steam (+130°C), 2% nitric acid (+60°C), 2% peracetic acid (+60°C), 2% phosphoric acid (+60°C), 5% sodium hydroxide (+60°C). Vacuum 0.9 bar.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-SCOT-LL-BE-019	19	32	10	30	85	0.73	60
IV-SCOT-LL-BE-025	25	38	10	30	112	0.91	60
IV-SCOT-LL-BE-032	32	46	10	30	144	1.19	60
IV-SCOT-LL-BE-038	38	52	10	30	171	1.45	60
IV-SCOT-LL-BE-051	51	65	10	30	250	1.91	60
IV-SCOT-LL-BE-063	63.5	80	10	30	317	2.83	60
IV-SCOT-LL-BE-076	76	93	10	30	380	3.35	60
IV-SCOT-LL-BE-102	102	120	10	30	561	4.89	60

## INDUSTRIAL HOSES - food



### PANAMA®

**Internal layer:** White NBR/PVC rubber

**Reinforcement:** Synthetic braid

**External layer:** Blue CR rubber

**Working temp.:** From -15°C up to +90°C

Delivery hose intended to convey foodstuffs which demand application of entirely odour-free and taste-free rubber. Highly recommended to transfer oils and fats. Internal layer complies with FDA 21 CFR 177.2600, D. M. 21/03/73, CE 1935/04 and CE 2023/06. External layer is resistant to fat and ageing. Cleaning for a few minutes with: steam (+110°C), 2% peracetic acid (+50°C), 2% phosphoric acid (+50°C), 5% sodium hydroxide (+50°C).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-PANAMA-019	19	31	10	30	0.67	60
IV-PANAMA-025	25	39	10	30	1.01	60
IV-PANAMA-032	32	46	10	30	1.23	60
IV-PANAMA-038	38	53	10	30	1.94	60
IV-PANAMA-051	51	67	10	30	2.09	60
IV-PANAMA-063	63.5	83.5	10	30	3.39	60
IV-PANAMA-076	76	96	10	30	3.98	60
IV-PANAMA-102	102	124	10	30	5.57	60



### ACAPULCO®

**Internal layer:** White NBR/PVC rubber

**Reinforcement:** Synthetic braid, steel wire helix

**External layer:** Blue CR rubber

**Working temp.:** From -15°C up to +90°C

Suction-delivery hose intended to convey foodstuffs which demand application of entirely odour-free and taste-free rubber. Highly recommended to transfer oils and fats. Internal layer complies with FDA 21 CFR 177.2600, D. M. 21/03/73, CE 1935/04 and CE 2023/06. External layer is resistant to fat and ageing. Cleaning for a few minutes with: steam (+110°C), 2% peracetic acid (+50°C), 2% phosphoric acid (+50°C), 5% sodium hydroxide (+50°C). Vacuum 0.9 bar.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-ACAPULCO-019	19	31	10	30	85	0.79	60
IV-ACAPULCO-025	25	37	10	30	112	0.97	60
IV-ACAPULCO-032	32	44	10	30	144	1.18	60
IV-ACAPULCO-038	38	52	10	30	171	1.63	60
IV-ACAPULCO-051	51	67	10	30	255	2.44	60
IV-ACAPULCO-063	63.5	79.5	10	30	317	3.05	60
IV-ACAPULCO-076	76	94	10	30	380	4.10	60
IV-ACAPULCO-102	102	122	10	30	561	6.22	60

## INDUSTRIAL HOSES - food



### FOODFLEX®

**Internal layer:** White natural rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Blue EPDM rubber  
**Working temp.:** From -25°C up to +80°C

Very flexible suction-delivery hose intended to convey wine, beer, fruit juices. Internal layer complies with FDA 21 CFR 177.2600, BfR XXI cat. 2, D. M. 21/03/73 as well as CE 1935/04 and CE 2023/06. Particularly recommended for milk and dairy products transfer. Suitable for a hose reel due to excellent flexibility. Cleaning for a few minutes with: steam (+110°C), 1% peracetic acid (+30°C), 1% phosphoric acid (+30°C), 5% sodium hydroxide (+30°C).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-FOODFLEX-025	25	36	6	18	0.7	50	0.79	60
IV-FOODFLEX-032	32	43	6	18	0.7	64	1.01	60
IV-FOODFLEX-038	38	49.5	6	18	0.6	76	1.27	60
IV-FOODFLEX-040	40	51.5	6	18	0.6	80	1.33	60
IV-FOODFLEX-045	45	56.5	6	18	0.6	90	1.47	60
IV-FOODFLEX-051	51	62.5	6	18	0.6	102	1.64	60
IV-FOODFLEX-063	63.5	76.5	6	18	0.5	127	2.28	60
IV-FOODFLEX-076	76	89.5	6	18	0.5	152	2.79	60
IV-FOODFLEX-080	80	93	6	18	0.5	160	2.84	60
IV-FOODFLEX-102	102	116	6	18	0.4	204	3.61	60



### PHARMAFLON

**Internal layer:** White, mirrorlike MFA polymer  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** White EPDM rubber  
**Working temp.:** From -50°C up to +170°C

Suction-delivery hose intended to transfer pharmaceuticals, cosmetics, foodstuffs and chemicals. The hose complies with CE 1935/2004 and CE 2023/2006. Free of plasticizers, phthalates and materials of animal origin. Internal layer is compliant with FDA, USP Class VI, D.M. 21/03/73 and the requirements of (EU) 10/2011. External layer meets the requirements of FDA standards. The hose has two copper wires to provide electrical conductivity between the hose ends. It also features excellent thermal and mechanical properties. Steam cleaning is acceptable for max. 30 minutes at +130°C.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	max. length [m]
MT-PHARMA-013	13	25	10	0.9	60	0.55	20
MT-PHARMA-019	19	31	10	0.9	90	0.72	20
MT-PHARMA-025	25	37	10	0.9	140	0.89	20
MT-PHARMA-032	32	45	10	0.9	200	1.20	20
MT-PHARMA-038	38	51	10	0.9	250	1.47	20
MT-PHARMA-051	51	65.5	10	0.9	300	2.08	20
MT-PHARMA-063	63.5	79.5	10	0.9	380	3.00	20
MT-PHARMA-076	76	92	10	0.9	500	3.48	20
MT-PHARMA-100	100	116	10	0.9	550	4.90	20

## INDUSTRIAL HOSES - food



### POTABLE HARDWALL®

**Internal layer:** White butyl rubber IIR  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Orange synthetic rubber  
**Working temp.:** From -40°C up to +100°C

Suction-delivery hose designed to transfer drinking water from ships to oil- rigs. External layer resistant to ozone, sea water and weather conditions. Meets FDA 21 CFR 177.2600 requirements for water-based products, BfR XXI cat.2 for food stuffs and the European Regulations CE 1935/04 and CE 2023/06. Vacuum 0.9 bar.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-POTABLE-LL-051	51	69	17	51	280	2.46	60
IV-POTABLE-LL-076	76	94.5	17	51	418	3.66	60
IV-POTABLE-LL-102	102	122	17	51	561	5.49	60
IV-POTABLE-LL-127	127	153.5	17	51	698	9.75	60



### VINO FLEX EASY

**Internal layer:** White IIR rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Red thermoplastic compound  
**Working temp.:** From -40°C up to +120°C

Suction-delivery hose intended to convey wine, beer, fruit juices, fruit juices, alcohol up to 96% and other foodstuffs (with no fat content). Its internal layer is compliant with FDA 21 CFR 177.2600, BfR XXI cat. 2, D.M. 21/03/73, CE 1935/04 and CE 2023/06. Odour-free and taste-free internal layer. External corrugations ensure exceptional flexibility and low coefficient of friction of the external layer and thus facilitate hose handling. Cleaning for a few minutes with: steam (+130°C), 2% nitric acid (+60°C), 2% peracetic acid (+60°C), 2% phosphoric acid (+60°C), 5% sodium hydroxide (+60°C). The hose is designed for assembly with EASY SHELL clamps.

code	I.D. [mm]	working pressure [bar]	bursting pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-VINO FLEX-E-025	25	10	30	0.6	75	0.66	60
IV-VINO FLEX-E-032	32	10	30	0.6	96	0.86	60
IV-VINO FLEX-E-038	38	10	30	0.6	114	1.13	60
IV-VINO FLEX-E-040	40	10	30	0.6	120	1.18	60
IV-VINO FLEX-E-051	51	10	30	0.6	153	1.45	60
IV-VINO FLEX-E-060	60	10	30	0.6	180	1.68	60
IV-VINO FLEX-E-063	63.5	10	30	0.6	191	1.77	60
IV-VINO FLEX-E-076	76	10	30	0.6	228	2.19	60
IV-VINO FLEX-E-080	80	10	30	0.6	240	2.30	60
IV-VINO FLEX-E-100	100	10	30	0.6	350	2.88	60

## INDUSTRIAL HOSES - food



### MILLENNIUM EASY

**Internal layer:** White synthetic rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Blue synthetic rubber  
**Working temp.:** From -30°C up to +100°C

Suction-delivery hose intended to convey such foodstuffs as: olive oil, wine, beer, fruit juices, milk, fats and alcohol up to 96%. Internal layer is compliant with FDA 21 CFR 177.2600, BfR XXI cat. 2, D.M. 21/03/73, CE 1935/04 and CE 2023/06. Totally phthalate free and PAH FREE (polycyclic aromatic hydrocarbon - approved by CERISIE laboratory No 045/12 and 241/13). Cleaning for a few minutes with: steam (+130°C), 2% nitric acid (+50°C), 2% peracetic acid (+50°C), 2% phosphoric acid (+50°C), 5% sodium hydroxide (+50°C). The hose is designed for assembly with EASY SHELL clamps.

code	I.D. [mm]	working pressure [bar]	bursting pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-MILLENNIUM-E-025	25	10	30	0.6	75	0.66	60
IV-MILLENNIUM-E-032	32	10	30	0.6	95	0.86	60
IV-MILLENNIUM-E-038	38	10	30	0.6	115	1.06	60
IV-MILLENNIUM-E-040	40	10	30	0.6	120	1.18	60
IV-MILLENNIUM-E-051	51	10	30	0.6	150	1.44	60
IV-MILLENNIUM-E-060	60	10	30	0.6	180	1.70	60
IV-MILLENNIUM-E-063	63.5	10	30	0.6	195	1.78	60
IV-MILLENNIUM-E-076	76	10	30	0.6	225	2.21	60
IV-MILLENNIUM-E-080	80	10	30	0.6	240	2.42	60
IV-MILLENNIUM-E-102	102	10	30	0.6	350	2.97	60



### EASY SHELL

Easy shell clamps are made of extremely durable plastic material. The clamps allow to assemble hygienic couplings to the externally corrugated hoses of EASY series (e.g. VINO FLEX EASY). The clamp has internal corrugations precisely adjusted to match the corrugations of EASY series hoses. Hygienic couplings (DIN, SMS and other) with standard hose tail for a safety clamp can also be assembled with easy shell clamps.

code	DN [mm]	working pressure [bar]	weight [kg]
IV-EASYSHELL-025	25	10	0.14
IV-EASYSHELL-032	32	10	0.22
IV-EASYSHELL-038	38	10	0.24
IV-EASYSHELL-040	40	10	0.38
IV-EASYSHELL-050	50	10	0.48
IV-EASYSHELL-063	63.5	10	0.50
IV-EASYSHELL-076	76	10	0.56
IV-EASYSHELL-080	80	10	0.72
IV-EASYSHELL-100	100	10	1.05

## INDUSTRIAL HOSES - chemical



### MP 20

**Internal layer:** Black EPDM rubber  
**Reinforcement:** Textile braid  
**External layer:** Black EPDM rubber  
**Working temp.:** From -40°C up to +95°C  
 (with peaks up to +110°C)

General purpose hose intended to transfer air, water, slightly aggressive chemicals, polyurethane paints, epoxy paints and water-soluble paints. Not suitable for cellulose paints, chlorinated rubber paints and aromatic solvents. Internal and external hose layers are antistatic  $R < 10^6 \Omega$ . (according to EN ISO 8031: 1997).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SP-MP20-06	6	13	20	80	40	0.15	100
SP-MP20-08	8	15	20	80	50	0.18	100
SP-MP20-10	10	17	20	80	60	0.21	100
SP-MP20-13	13	21	20	80	80	0.30	100
SP-MP20-16	16	24	20	80	100	0.35	100
SP-MP20-19	19	28	20	80	115	0.47	50
SP-MP20-25	25	35	20	80	150	0.67	50
SP-MP20-32	32	44	20	80	200	1.05	50
SP-MP20-38	38	50	20	80	250	1.20	50



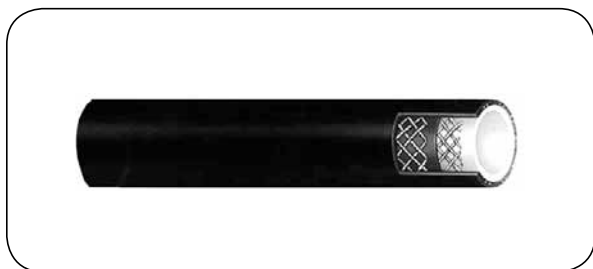
### MPX 20

**Internal layer:** Black EPDM rubber  
**Reinforcement:** Textile braid  
**External layer:** Black EPDM rubber  
**Working temp.:** From -40°C up to +100°C  
 (with peaks up to +120°C)

General purpose hose intended to transfer air, water, slightly aggressive chemicals, polyurethane paints, epoxy paints and water-soluble paints. Not suitable for cellulose paints, chlorinated rubber paints and aromatic solvents. Internal and external hose layers are antistatic -  $R < 10^6 \Omega$ .

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SP-MPX20-06	6	13	20	80	36	0.14	50
SP-MPX20-08	8	15	20	80	50	0.17	50
SP-MPX20-10	10	17	20	80	60	0.20	50
SP-MPX20-13	13	21	20	80	80	0.29	50
SP-MPX20-16	16	24	20	80	100	0.35	50
SP-MPX20-19	19	28	20	80	114	0.46	50
SP-MPX20-25	25	35	20	80	150	0.69	50
SP-MPX20-32	32	44	20	80	200	1.05	50
SP-MPX20-38	38	50	20	80	230	1.23	50

## INDUSTRIAL HOSES - chemical

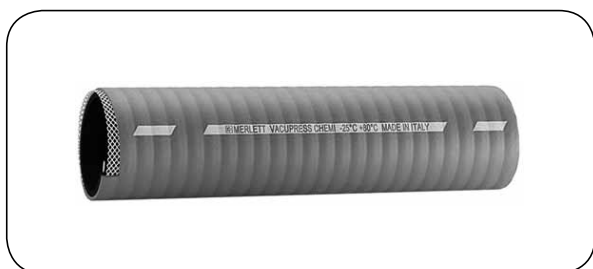


### NR SPRAY

**Internal layer:** Polyamide (silicone-free)  
**Reinforcement:** Textile braid  
**External layer:** Black synthetic rubber  
**Working temp.:** From -20°C up to +90°C

Delivery hose designed to transfer paints, lacquers, adhesives, solvents, turpentine, air, oil and a wide range of chemicals. It is widely used in the automotive industry for spray painting and for many other applications. External layer is antistatic - R <1MΩ for 6 mm and 10 mm diameter. Safety factor 4:1.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
GY-NRSPRAY-06	6.4	12.4	50	48	0.12	152.5
GY-NRSPRAY-10	9.5	17.8	50	64	0.22	152.5
GY-NRSPRAY-13	12.7	22.1	50	104	0.33	152.5
GY-NRSPRAY-19	19.1	30.2	50	175	0.54	152.5
GY-NRSPRAY-25	25.4	38.4	50	225	0.80	152.5



### VACUPRESS CHEM

**Internal layer:** Santoprene thermoplastic rubber  
**Reinforcement:** Polyester yarn, steel wire helix  
**External layer:** Santoprene thermoplastic rubber  
**Working temp.:** From -25°C up to +80°C (while cleaning with peaks up to +110°C for a moment)

Very lightweight, flexible suction-delivery hose designed to transfer chemicals. Resistant to detergents, weather conditions and abrasion according to ISO 4649:150 mm³. Smooth internal and external layers ensure the highest degree of cleanliness. Recommended for tank trucks and loading/reloading stations. A version with polyethylene inlay that extends the chemical resistance of the hose is also available (VACUPRESS SUPER CHEMI - diameter up to 63 mm).

code	I.D. [mm]	O.D. [mm]	working press. 20°C [bar]	bursting press. 20°C [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
ME-VACUPRCH-019	19	28	15	45	0.9	70	0.38	60
ME-VACUPRCH-025	25	35.5	14	42	0.9	80	0.58	60
ME-VACUPRCH-030	30	40.5	10	30	0.9	85	0.65	60
ME-VACUPRCH-032	32	42.5	10	30	0.9	90	0.70	60
ME-VACUPRCH-035	35	47	10	30	0.9	95	0.85	60
ME-VACUPRCH-038	38	50	10	30	0.9	100	0.92	30
ME-VACUPRCH-040	40	52	10	30	0.9	110	0.97	30
ME-VACUPRCH-045	45	57	10	30	0.9	120	1.10	30
ME-VACUPRCH-050	50	63	10	30	0.9	130	1.28	30
ME-VACUPRCH-060	60	73	9	27	0.9	160	1.55	30
ME-VACUPRCH-063	63	76	9	27	0.9	180	1.60	30
ME-VACUPRCH-076	76	91	8	24	0.9	230	2.35	30
ME-VACUPRCH-080	80	95	8	24	0.9	250	2.40	30
ME-VACUPRCH-090	90	106	8	24	0.9	280	2.75	30
ME-VACUPRCH-102	102	118	7	21	0.9	310	3.10	30

## INDUSTRIAL HOSES - chemical



### SUPERTOP UPE®

**Internal layer:** White UPE polyethylene  
**Reinforcement:** Synthetic braid  
**External layer:** Black EPDM rubber  
**Working temp.:** From -30°C up to +100°C

Delivery hose designed to convey liquid chemicals. Widely used in chemical and petrochemical industry. The hose features copper wires to ensure electrical conductivity. The external layer is resistant to abrasion and weather conditions. Complies with FDA 21 CFR 177.1520 standard. Meets the requirements of EN12115:11 (M version).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-SUPUPE-013	13	25	16	64	0.41	60
IV-SUPUPE-019	19	31	16	64	0.54	60
IV-SUPUPE-025	25	37	16	64	0.66	60
IV-SUPUPE-032	32	45	16	64	0.86	60
IV-SUPUPE-038	38	52	16	64	1.10	60
IV-SUPUPE-051	51	67	16	64	1.62	60
IV-SUPUPE-063	63.5	79	16	64	1.90	60
IV-SUPUPE-076	76	92	16	64	2.35	60
IV-SUPUPE-102	102	118	16	64	2.96	60



### SUPERTOP / LL UPE®

**Internal layer:** White UPE polyethylene  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Black EPDM rubber  
**Working temp.:** From -30°C up to +100°C

Suction-delivery hose designed to convey liquid chemicals. Widely used in chemical and petrochemical industry. The hose features copper wires to ensure electrical conductivity. The external layer is resistant to abrasion and weather conditions. Complies with FDA 21 CFR 177.1520 standard. Meets the requirements of EN12115:11 (M version). Vacuum 0.9 bar.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-SUPUPE-LL-019	19	31	16	64	152	0.54	60
IV-SUPUPE-LL-025	25	37	16	64	200	0.66	60
IV-SUPUPE-LL-032	32	44	16	64	256	0.86	60
IV-SUPUPE-LL-038	38	51	16	64	304	1.10	60
IV-SUPUPE-LL-051	51	65	16	64	408	1.62	60
IV-SUPUPE-LL-063	63.5	78	16	64	508	1.90	60
IV-SUPUPE-LL-076	76	91	16	64	608	2.35	60
IV-SUPUPE-LL-102	102	118	16	64	816	2.96	60



## INDUSTRIAL HOSES - chemical



### ORLANDO®

**Internal layer:** Black EPM rubber  
**Reinforcement:** Synthetic braid  
**External layer:** Black EPM rubber  
**Working temp.:** From -40°C up to +100°C

Delivery hose designed to transfer acids, alkalis, industrial alcohol, polluted water, sea water, etc. The internal and external layer of the hose is antistatic.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-ORLANDO-019	19	29	10	40	0.42	120
IV-ORLANDO-025	25	35	10	40	0.51	120
IV-ORLANDO-032	32	42	10	40	0.60	120
IV-ORLANDO-038	38	50	10	40	0.91	120
IV-ORLANDO-051	51	64	10	40	1.30	120
IV-ORLANDO-063	63.5	80.5	10	40	2.07	120
IV-ORLANDO-076	76	92	10	40	2.27	120
IV-ORLANDO-090	90	106	10	40	2.61	120
IV-ORLANDO-102	102	121	10	40	3.63	120
IV-ORLANDO-125	125	141	10	40	3.59	120



### EVEREST®

**Internal layer:** Black EPM rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Black EPM rubber  
**Working temp.:** From -40°C up to +100°C

Suction-delivery hose designed to transfer acids, alkalis, industrial alcohol, polluted water, etc. The internal and external layer of the hose is antistatic. Vacuum 0.9 bar

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-EVEREST-025	25	38	10	40	112	0.87	120
IV-EVEREST-032	32	46	10	40	144	1.16	120
IV-EVEREST-038	38	52	10	40	190	1.34	120
IV-EVEREST-051	51	68	10	40	255	2.07	120
IV-EVEREST-063	63.5	81	10	40	315	2.82	120
IV-EVEREST-076	76	95	10	40	380	3.59	120
IV-EVEREST-102	102	122	10	40	561	5.00	120

## INDUSTRIAL HOSES - chemical



### REAL®

**Internal layer:** Black Viton compound (FPM)

**Reinforcement:** Synthetic braid

**External layer:** Black CR rubber

**Working temp.:** From -25°C up to +100°C

Delivery hose designed to convey highly aggressive chemicals, concentrated aromatic compounds, hot oil in chemical and petrochemical industry. The external layer is resistant to weather conditions, abrasion, ozone and oils.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-REAL-019	19	31	10	40	0.66	120
IV-REAL-025	25	38	10	40	0.86	120
IV-REAL-032	32	46	10	40	1.17	120
IV-REAL-038	38	54	10	40	1.60	120
IV-REAL-051	51	68.5	10	40	2.15	120
IV-REAL-063	63.5	81	10	40	2.60	120
IV-REAL-076	76	95	10	40	3.42	120
IV-REAL-102	102	121	10	40	4.47	120



### PROVIDENCE®

**Internal layer:** Black Viton compound (FPM)

**Reinforcement:** Synthetic braid, steel wire helix

**External layer:** Black CR rubber

**Working temp.:** From -25°C up to +100°C

Suction-delivery hose designed to convey highly aggressive chemicals, concentrated aromatic compounds, hot oil in chemical and petrochemical industry. The external layer is resistant to weather conditions, abrasion, ozone and oils. Vacuum 0.9 bar.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-PROV-019	19	30	10	40	85	0.68	120
IV-PROV-025	25	36	10	40	110	0.88	120
IV-PROV-032	32	46	10	40	140	1.47	120
IV-PROV-038	38	52	10	40	165	1.63	120
IV-PROV-051	51	68.5	10	40	250	2.55	120
IV-PROV-063	63.5	81	10	40	320	3.20	120
IV-PROV-076	76	95	10	40	360	3.99	120
IV-PROV-102	102	122	10	40	612	6.20	120

## INDUSTRIAL HOSES - chemical



### MANICHEM MARBLE

**Internal layer:** Black & white UPE polyethylene

**Reinforcement:** Synthetic braid, steel wire helix

**External layer:** Black EPDM rubber

**Working temp.:** From -35°C up to +100°C

Suction-delivery hose developed to convey aggressive chemicals. Low coefficient of friction during medium transfer. The internal layer is antistatic and compliant with FDA, D.M. 21/03/73 EU 10/2011 standards. The external layer is antistatic ( $R < 10^6 \Omega$ ), resistant to abrasion, ozone and weather conditions. It ensures distribution of electrostatic charge through the hose wall -  $R < 10^9 \Omega$  (not only on the surface). Steam cleaning at temp. +130°C is permitted for a maximum of 30 min. Marked with Ex symbol (intended for use in potentially explosive zones). Manufactured according to EN12115:11 and EN 50014/ IEC 60079-0. Vacuum 0.9 bar.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
MT-MANICHEM-M-006	6	16	16	64	42	0.26	40
MT-MANICHEM-M-008	8	20	16	64	56	0.36	40
MT-MANICHEM-M-010	10	20	16	64	70	0.44	40
MT-MANICHEM-M-013	13	23	16	64	85	0.42	40
MT-MANICHEM-M-016	16	28	16	64	112	0.51	40
MT-MANICHEM-M-019	19	31	16	64	125	0.65	40
MT-MANICHEM-M-025	25	37	16	64	150	0.81	40
MT-MANICHEM-M-032	32	44	16	64	175	1.00	40
MT-MANICHEM-M-038	38	51	16	64	225	1.30	40
MT-MANICHEM-M-050	50	66	16	64	275	2.20	40
MT-MANICHEM-M-065	63.5	79.5	16	64	300	2.60	40
MT-MANICHEM-M-075	75	91	16	64	350	3.15	40
MT-MANICHEM-M-100	100	118	16	48	450	4.90	40
MT-MANICHEM-M-125	125	146	12	36	1000	6.90	40
MT-MANICHEM-M-150	150	174	12	36	1200	9.10	40

## INDUSTRIAL HOSES - chemical



### MANIFLON

**Internal layer:** White, mirrorlike MFA polymer  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Black EPDM rubber  
**Working temp.:** From -50°C up to +170°C

Suction-delivery hose designed to convey aggressive chemicals. Features excellent thermal and mechanical properties. Complies with CE 1935/2004 and CE 2023/2006. Free of plasticizers, phthalates and materials of animal origin in accordance with EU Regulation CE 1907/2006 (REACH). Internal layer complies with USP Class VI, FDA, D. M. 21/03/73 and European EU 10/2011 standard. The hose has two copper wires to provide electrical conductivity between the hose ends. Resistance -  $R < 10^6 \Omega$  (M type). Meets the requirements of EN 12115:11 standard. Steam cleaning is acceptable for max. 30 minutes at +130°C. Vacuum 0.9 bar.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
MT-MANIFLON-013	13	25	16	64	90	0.55	20
MT-MANIFLON-019	19	32	16	64	125	0.75	20
MT-MANIFLON-025	25	38	16	64	150	0.95	20
MT-MANIFLON-032	32	45	16	64	175	1.15	20
MT-MANIFLON-038	38	51	16	64	225	1.50	20
MT-MANIFLON-051	51	66	16	64	275	2.20	20
MT-MANIFLON-063	63.5	79.5	16	64	300	3.00	20
MT-MANIFLON-076	76	93	16	64	350	3.70	20
MT-MANIFLON-100	100	118	16	64	500	5.00	20



### CHEMSTAR / UPE / SD

**Internal layer:** Black UHMWPE polyethylene  
**Reinforcement:** Textile braid, steel wire helix  
**External layer:** Black EPDM rubber  
**Working temp.:** From -30°C up to +100°C



Suction-delivery hose designed to convey liquid chemicals. Widely used in food, chemical and petrochemical industry. The hose has copper wire to ensure electrical conductivity between hose ends. External layer is resistant to abrasion and weather conditions. Meets the requirements of CE 1935/04 and CE 2023/06. The external layer is antistatic ( $R < 10^6 \Omega$ ), resistant to abrasion, ozone and weather conditions. It ensures dissipation of electrostatic charges also through the hose wall ( $R < 10^9 \Omega$ ) (not only on the surface). Marked with  $\Omega/T$  symbol. Meets the requirements of EN 12115:11. Vacuum 0.9 bar. Safety factor 4:1.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SO-CHEMSTAR-UPE-019	19	31	16	188	0.68	61
SO-CHEMSTAR-UPE-025	25	37	16	225	0.83	61
SO-CHEMSTAR-UPE-032	32	44	16	263	1.01	61
SO-CHEMSTAR-UPE-038	38	51	16	338	1.16	61
SO-CHEMSTAR-UPE-051	51	67	16	413	1.85	61
SO-CHEMSTAR-UPE-063	63	79	16	450	2.58	61
SO-CHEMSTAR-UPE-076	76	92	16	525	2.91	61
SO-CHEMSTAR-UPE-102	102	118	16	675	3.93	61

## INDUSTRIAL HOSES - chemical



### TEFLEX

**Internal layer:** Smooth FEP  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Orange synthetic rubber  
**Working temp.:** From -40°C up to +150°C

Suction- delivery hose designed to transfer a wide range of aggressive chemical products. Safety factor 4:1. Designed to be cleaned using CIP method at +150°C. Internal layer complies with USP Class VI, FDA 21 CFR 177.1550. Phthalate free. External layer resistant to ozone and weather conditions. The hose features copper wires to ensure electrical conductivity. Meets the requirements of EN12115 standard.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-TEFLEX-19	19	31.5	16	0.9	90	0.70	40
IV-TEFLEX-25	25	37.5	16	0.9	120	0.97	40
IV-TEFLEX-32	32	45	16	0.9	150	1.19	40
IV-TEFLEX-38	38	51.5	16	0.9	180	1.43	40
IV-TEFLEX-51	51	65.5	16	0.9	250	2.04	40
IV-TEFLEX-76	76	90	16	0.8	400	2.95	40



### DYNAMIC SAFE-TECH

**Internal layer:** Black, mirrorlike PFA polymer  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Black & white UPE polyethylene  
**Working temp.:** From -35°C up to +130°C

Suction-delivery hose „Full Ohm” intended to the transfer of highly flammable substances. Widely used in the chemical, petrochemical, biotech, pharmaceutical, cosmetic industries and other application with enhanced safety requirements. Fully antistatic -  $R < 10^9 \Omega$  ( $\Omega/T$ . version), meets the requirements of EN 12115:11 standard. The hose is compliant with CE 1935/2004 and CE 2023/2006. Free of plasticizers, phthalates and materials of animal origin (according to EC 1907/2006 (REACH). Internal layer is antistatic -  $R < 10^6 \Omega$ , complies with USP Class VI, FDA, UNI EN ISO 10993 and European EU 10/2011 standard. External layer, Marble type ( $R < 10^6 \Omega$ ), ensures increased resistance to abrasion, ozone and weather conditions, is non-marking and made in accordance with FDA standard. Available with a copper wire, marked M/T. Vacuum 0.9 bar.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
MT-DYNAMIC-ST-13	13	25	10	40	135	0.55	20
MT-DYNAMIC-ST-19	19	31	10	40	188	0.72	20
MT-DYNAMIC-ST-25	25	37	10	40	225	0.89	20
MT-DYNAMIC-ST-32	32	45	10	40	262	1.16	20
MT-DYNAMIC-ST-38	38	51	10	40	338	1.47	20
MT-DYNAMIC-ST-51	51	65.5	10	40	412	2.08	20
MT-DYNAMIC-ST-63	63.5	79.5	10	40	450	2.80	20
MT-DYNAMIC-ST-76	76	92	10	40	525	3.48	20

## INDUSTRIAL HOSES - chemical



### AMMOTECH

**Internal layer:** Black antistatic synthetic rubber  
**Reinforcement:** Synthetic braid  
**External layer:** Black antistatic, synthetic rubber  
**Working temp.:** From -40°C up to +55°C

Delivery hose designed to convey anhydrous ammonia liquid or gas. Frequently used for the production of fertilizers. The hoses intended for ammonia transfer must be selected and handled with special care and attention as their service life is limited and the medium highly poisonous. Customers must contact Sales or Technical Department in order to select a complete hose assembly for ammonia transfer. Only steel fittings permanently crimped with ferrules can be used. Periodic testing and inspections are required to check the condition of the hose assembly. Only a properly trained operator can handle the ammonia hose. Complies with EN ISO 5771:1998. External and internal layers are antistatic -  $R \leq 10^6 \Omega/m$ .

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-AMMOTECH-13	13	28	25	125	0.53	120
IV-AMMOTECH-16	16	31	25	125	0.60	120
IV-AMMOTECH-19	19	34	25	125	0.69	120
IV-AMMOTECH-25	25	40	25	125	0.84	120
IV-AMMOTECH-32	32	70	25	125	2.00	120



### BLUE 10-20 BAR

**Internal layer:** Black EPDM rubber  
**Reinforcement:** Synthetic braid  
**External layer:** Black EPDM rubber  
**Working temp.:** From -40°C up to +100°C

Delivery hose designed to transfer 32.5% high-purity aqueous urea solution referred to as AdBlue. In the automotive industry, AdBlue is used SCR catalyst systems to reduce nitrogen oxides (NOx) emissions - engine exhaust pollutants. Internal layer is antistatic ( $R < 1 \text{ M}\Omega/m$ ) and sulphur-free. Not contaminated with additives according to ISO 22241-2 standard, I method - verified by CERISIE laboratory (RP. n. 273/2014). External layer is antistatic ( $R < 1 \text{ M}\Omega/m$ ).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
BLUE 10 BAR						
IV-BLUE10-16	16	23	10	30	0.27	60
IV-BLUE10-19	19	27	10	30	0.37	40
IV-BLUE10-25	25	36	10	30	0.68	40
BLUE 20 BAR						
IV-BLUE20-08	8	15	20	60	0.16	100
IV-BLUE20-10	10	17	20	60	0.19	90
IV-BLUE20-13	13	20	20	60	0.23	60
IV-BLUE20-16	16	26	20	60	0.43	60
IV-BLUE20-19	19	30	20	60	0.56	40
IV-BLUE20-25	25	37	20	60	0.76	40

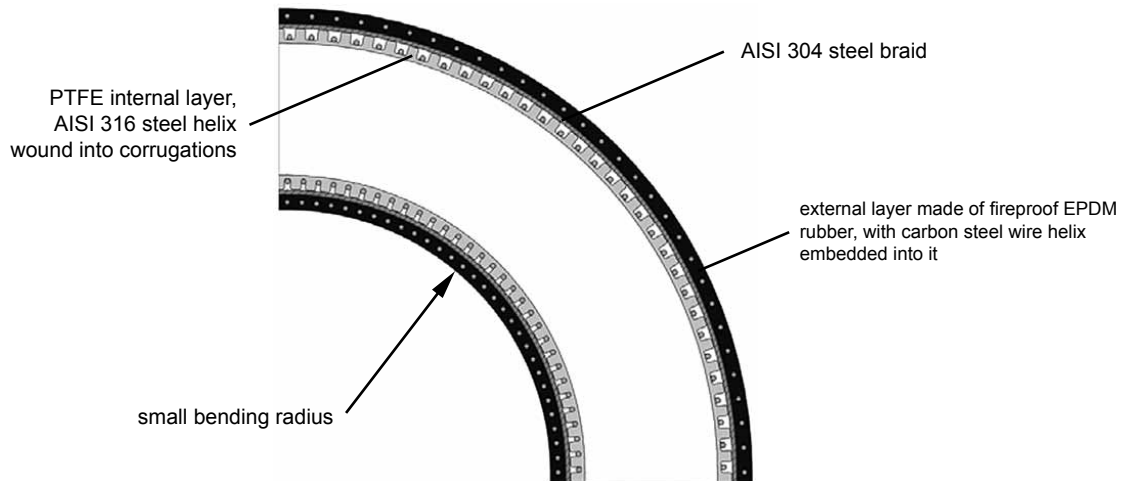
## INDUSTRIAL HOSES - chemical



### CORROLINE PLUS

- Internal layer:** Smooth inside, corrugated outside PTFE (teflon), antistatic
- Reinforcement:** Steel wire helix (AISI 316), AISI 304 steel braid
- External layer:** Black, smooth, antistatic, fireproof EPDM rubber with carbon steel wire embedded into it
- Working temp.:** From -40°C up to +140°C

Suction-delivery PTFE hose designed to transfer all kinds of chemicals, also very aggressive, fuels, oils, paints, solvents, adhesives, colourants, detergents. Intended for the most demanding applications that require a perfectly flexible hose with a minimum bending radius, highly resistant to cyclic bending as well as kinking, with extended service life. CORROLINE PLUS was developed as an alternative to classic rubber hoses made of FEP, PFA, MFA, XLPE or UHMWPE linings. Compared to these hoses, CORROLINE PLUS is more flexible, more resistant to kinking and its service life is much longer. The hose features excellent resistance to cyclic bending (up to 100 000 cycles), maximum flow rates and low permeability of gases. Supplied as complete hose assemblies with standard or PTFE lined (flared) fittings. Meets the requirements of EN 12115 standard.



The hose is made of smooth inside and corrugated outside PTFE. It is reinforced with AISI 316 steel wire helix wound into the external tube corrugations and with an external AISI 304 stainless steel braid. The construction combines properties of smoothbore hoses (ease of cleaning, uninterrupted flow), high flexibility and excellent kink resistance.

code	nominal diameter [inch]	nominal diameter [mm]	flow diameter [mm]	O.D. [mm]	working pressure [bar]	bending radius [mm]	weight [kg/m]	maximum length [m]
AF-CLPSS-015AS-RC-BK	1/2	15 (13)	13	21.5	69	35	0.40	30
AF-CLPSS-020AS-RC-BK	3/4	20	19.4	28.5	69	50	0.70	30
AF-CLPSS-025AS-RC-BK	1	25	25.7	37	41	70	1.10	30
AF-CLPSS-032AS-RC-BK	1.1/4	32	32.0	44.6	38	100	1.60	30
AF-CLPSS-040AS-RC-BK	1.1/2	40	38.5	51.7	34	120	1.92	30
AF-CLPSS-050AS-RC-BK	2	50	51	65	28	150	2.80	30

Optionally available with a non-antistatic tube (of natural PTFE), a code example: AF- CLPSS-025 RC-BK. Safety factor 4:1. The working pressure of the hose assembly is limited by the working pressure of the fittings used. Resistant to full vacuum up to +140°C.





# INDUSTRIAL HOSES - chemical

## Fittings for CORROLINE PLUS hoses

CORROLINE PLUS is assembled with DC type (DIRECT CRIMP) fittings as a standard. Besides, special fittings for PTFE hoses assembled with AF-BFXT3 ferrules or flared fittings (internal PTFE layer is extended through the fitting and flared out as the sealing face) can be used. DIP PIPES tube fittings intended for filling up or suction of fluids from containers are also available.





### DC (DIRECT CRIMP) standard fittings for CORROLINE PLUS hose

Fitting material: AISI 316 steel, ferrule material: AISI 304 steel.

fitting type		BSP female, 60° cone	BSP male, flat seal*	BSPT male	swivel flange** (insert)
					
hose DN		code	code	code	code
[inch]	[mm]				
1/2	15	AF-DCX-BW110-08-08	AF-DCX-BZ140-08-08	AF-DCX-BZ130-08-08	-
3/4	20	AF-DCX-BW110-12-12	AF-DCX-BZ140-12-12	AF-DCX-BZ130-12-12	AF-DCX-SFL-20W
1	25	AF-DCX-BW110-16-16	AF-DCX-BZ140-16-16	AF-DCX-BZ130-16-16	AF-DCX-SFL-25W
1.1/4	32	-	AF-DCX-BZ140-20-20	-	-
1.1/2	40	AF-DCX-BW110-24-24	AF-DCX-BZ140-24-24	AF-DCX-BZ130-24-24	AF-DCX-SFL-40W
2	50	AF-DCX-BW110-32-32	AF-DCX-BZ140-32-32	AF-DCX-BZ130-32-32	AF-DCX-SFL-50W

\* when BSP male thread flat seal fittings are used, different types of couplings can be optionally connected e.g. TW, CAMLOCK, dry disconnect couplings.

\*\* to assemble a swivel flange fitting, a flange of a proper size must be first selected (AF-CFXSFL...K)..

fitting type		CAMLOCK C (SAFLOK)	CAMLOCK A	TRICLOVER	ferrule
					
hose DN		code	code	code	code
[inch]	[mm]				
1/2	15	-	-	AF-DCX-TC-025-09-13 AF-DCX-TC-050-09-13	AF-DC-015
3/4	20	AF-DCX-CAM-020G	AF-DCX-CAM-020W	AF-DCX-TC-025-16-19 AF-DCX-TC-050-16-16	AF-DC-020
1	25	AF-DCX-CAM-025G	AF-DCX-CAM-025W	AF-DCX-TC-050-22-25 AF-DCX-TC-050-35-25	AF-DC-025
1.1/4	32	AF-DCX-CAM-032G	-	-	AF-DC-032
1.1/2	40	AF-DCX-CAM-040G	AF-DCX-CAM-040W	AF-DCX-TC-050-35-40 AF-DCX-TC-064-48-40	AF-DC-040
2	50	AF-DCX-CAM-050G	AF-DCX-CAM-050W	AF-DCX-TC-064-48-50	AF-DC-050



## INDUSTRIAL HOSES - chemical

### CORROLINE PLUS hose versions



#### **DBK 300 - double rubber cover**

Designed for applications where excessive bending of the hose assembly directly at the ferrule occurs. An additional layer of 300 mm long rubber is vulcanized on the rubber cover of the hose. DRC-300 version meets the fire resistance requirements of BS5173 standard.



#### **SG - protection polyethylene spiral**

A lightweight polyethylene spiral applied to provide additional protection. Prevents external abrasion. The working temperature ranges from -40°C up to +100°C.



#### **PC - protection steel helix**

An external wire to provide additional protection against abrasion.



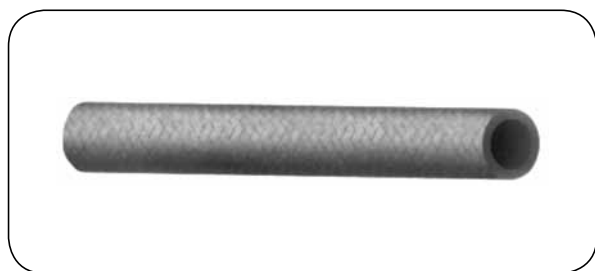
#### **EC - electrical continuity between end fittings**

Resistance between end fittings for all versions of CORROLINE hoses is  $<20 \Omega$ . It also applies to PB version but only if the special procedures were followed during assembly.

According to EN ISO 8031:2009 standard, these hoses can be marked with the letter "M". If electrical continuity is required, EC version should be ordered.

## INDUSTRIAL HOSES - petrochemical

### General purpose hoses for fuel and oil

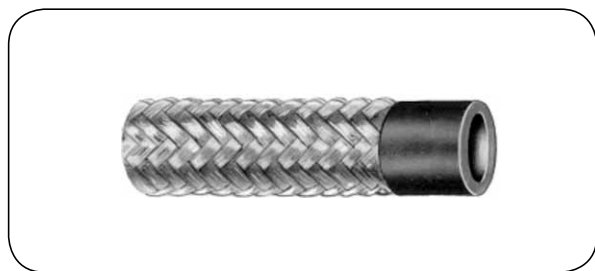


#### NAFTREX / B

**Internal layer:** Black NBR rubber  
**External layer:** Black textile braid protecting against heat  
**Working temp.:** From -40°C up to +120°C

Developed for fuel and cooling systems. Working temperature depends on the medium: for fuels with aromatic content up to 50% it is +40°C; for diesel oil, air, non-oxidative liquid detergents it is +80°C; for water, glycol-based cooling liquids it is +90°C. Fulfills DIN 73379 standard.

code	I.D. [mm]	wall thickness [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	standard length [m]
BG-NAFTREX-B-03,2	3.2	1.9	7	10	30	20
BG-NAFTREX-B-03,5	3.5	2	7.5	10	30	20
BG-NAFTREX-B-04	4	2.5	9	10	30	20
BG-NAFTREX-B-04,5	4.5	2.5	9.5	10	30	20
BG-NAFTREX-B-05	5	2.5	10	10	30	20
BG-NAFTREX-B-05,5	5.5	2.5	10.5	10	30	20
BG-NAFTREX-B-06	6	2.5	11	10	30	20
BG-NAFTREX-B-07	7	2.5	12	10	30	20
BG-NAFTREX-B-07,5	7.5	2.5	12.5	10	30	20
BG-NAFTREX-B-08	8	2.5	13	10	30	20
BG-NAFTREX-B-09	9	2.5	14	10	30	20
BG-NAFTREX-B-11,5	11.5	2.75	17	10	30	20



#### GALVOIL / L

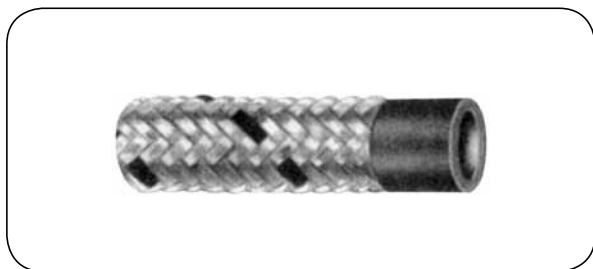
**Internal layer:** Black NBR rubber  
**Reinforcement:** External steel braid  
**Working temp.:** From -35°C up to +90°C

Delivery hose designed to transfer transmission, heating and diesel oil as well petrochemical products. Internal layer resistant to oil and fuel. Manufactured according to ISO 1307 standard.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SL-GALVOIL-L-06	6	11	25	75	30	0.16	100
SL-GALVOIL-L-08	8	13	25	75	40	0.23	100
SL-GALVOIL-L-10	10	15	25	75	50	0.28	100
SL-GALVOIL-L-13	13	19	20	60	65	0.38	50
SL-GALVOIL-L-16	16	22	20	60	80	0.46	50

## INDUSTRIAL HOSES - petrochemical

### General purpose hoses for fuel and oil



#### PZ

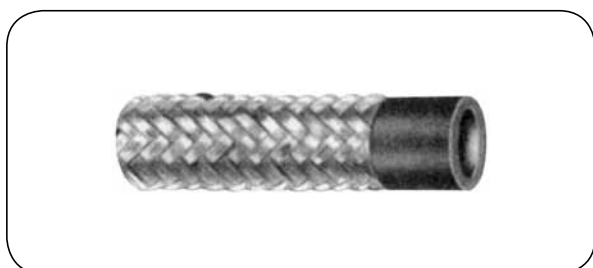
**Internal layer:** Black synthetic rubber

**Reinforcement:** External steel braid

**Working temp.:** From -35°C up to +80°C

Developed for use in fuel and oil installations. Manufactured according to DIN 73379 standard.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	standard length [m]
EC-101005	4.5	9.5	20	60	100
EC-101006	5.5	10.5	20	60	100
EC-101008	7.5	12.5	15	50	100
EC-101010	9	14	15	50	100
EC-101012	11.5	18	15	50	100
EC-101015	14.5	22	15	50	100
EC-101018	17	25	15	50	100
EC-101020	19	29	10	50	100



#### PZVA

**Internal layer:** Black synthetic rubber

**Reinforcement:** Stainless steel external braid

**Working temp.:** From -35°C up to +80°C

Developed for use in fuel and oil installations. Manufactured according to DIN 73379 standard.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	standard length [m]
EC-101356	5.5	10.5	20	60	100
EC-101358	7.5	12.5	15	50	100
EC-101360	9	15	15	50	100
EC-101362	11.5	18	15	50	100

## INDUSTRIAL HOSES - petrochemical

### General purpose hoses for fuel and oil



#### FPM / ECO

**Internal layer:** Viton (FPM)  
**Reinforcement:** Textile braid  
**External layer:** Synthetic rubber  
**Working temp.:** From -35°C up to +80°C

Special multilayer hose designed to transfer biofuels, particularly those based on rapeseed oil. Resistant to Rape-seed Methyl Ester (RME).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	standard length [m]
EC-101402	3.2	9	25	80	100
EC-101155	5.5	11.5	15	50	100
EC-101158	7.5	14.5	15	40	100
EC-101160	9.5	16.5	15	40	100
EC-101162	11.5	18.5	15	40	100



#### CARBUR 10-20 BAR

**Internal layer:** Black NBR rubber  
**Reinforcement:** Robust synthetic fabric  
**External layer:** Black PVC/NBR compound  
**Working temp.:** From -20°C up to +70°C

Flexible, delivery hose designed to transfer liquid petrochemical products with aromatic content up to 50%. Suitable for oil systems, lubrication systems, etc. Antistatic internal layer -  $R \leq 10^6 \Omega/m$ . External layer resistant to fuel, oil, weather conditions, ozone and abrasion.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
CARBUR 10 bar							
IV-CARBUR10-05	5	12	10	30	40	0.2	100
IV-CARBUR10-06	6	13	10	30	50	0.4	100
IV-CARBUR10-08	8	15	10	30	65	0.7	100
IV-CARBUR10-10	10	17	10	30	80	0.20	100
IV-CARBUR10-13	13	20	10	30	105	0.24	60
IV-CARBUR10-15	15	23	10	30	120	0.32	60
IV-CARBUR10-19	19	27	10	30	150	0.39	60
IV-CARBUR10-25	25	35	10	30	200	0.63	40
CARBUR 20 bar							
IV-CARBUR20-06	6	14	20	60	60	0.17	100
IV-CARBUR20-08	8	17	20	60	65	0.24	100
IV-CARBUR20-10	10	19	20	60	80	0.28	100

# INDUSTRIAL HOSES - petrochemical

## General purpose hoses for fuel and oil



### CODAN 3106

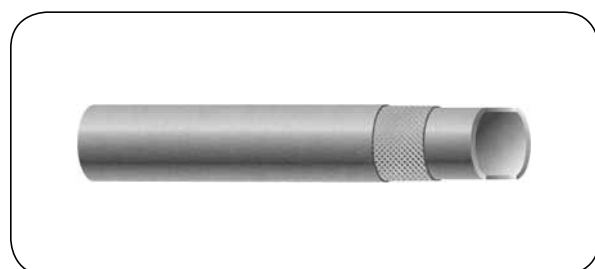
**Internal layer:** Black NBR/PVC compound

**External layer:** Black polyester braid

**Working temp.:** From -30°C up to +100°C

Flexible hose for leaded and unleaded petrol. It is used to connect e.g. a carburetor and a fuel pump in cars, motorcycles, mopeds, garden tractors, etc. Not suitable for engines with an injection system. Parameters similar to those of DIN 73379 B:1984 standard.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
CO-3106-032	3.2	7.2	12.5	50	20	0.044	30
CO-3106-035	3.5	7.5	12.5	50	20	0.046	30
CO-3106-040	4	9	11	45	20	0.068	30
CO-3106-045	4.5	9.5	11	45	20	0.073	30
CO-3106-050	5	10	10	42	20	0.080	30
CO-3106-055	5.5	10.5	10	39	20	0.085	30
CO-3106-060	6	11	10	39	20	0.090	30
CO-3106-065	6.5	11.5	10	39	20	0.065	30
CO-3106-070	7	12	9	35	20	0.100	30
CO-3106-075	7.5	12.5	9	35	30	0.105	30
CO-3106-080	8	13	8	32	30	0.110	30
CO-3106-090	9	14	6	23	40	0.123	30
CO-3106-095	9.5	15	6	23	40	0.130	30
CO-3106-100	10	15	6	23	40	0.133	30
CO-3106-110	11	16	5	20	40	0.144	30
CO-3106-120	12	17	5	20	40	0.160	30
CO-3106-127	12.7	17.7	5	15	40	0.180	30



### TU 40

**Internal layer:** Black NBR rubber

**Reinforcement:** Textile braid

**External layer:** Black SBR/NVC rubber

**Working temp.:** From -45°C up to +90°C  
(for air from -45°C up to +70°C)

Delivery hose used to transfer fuels, diesel oil, heating oil (EN 590:2010) and air.  
Conductive internal layer -  $R < 10^6 \Omega/m$ .

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SP-TU40-04	4	11	40	160	50	0.11	50
SP-TU40-06	6	13	40	160	64	0.16	50
SP-TU40-08	8	15	40	160	73	0.19	50
SP-TU40-10	10	17	40	160	77	0.22	50

## INDUSTRIAL HOSES - petrochemical

### General purpose hoses for fuel and oil



#### TU 25

**Internal layer:** Black NBR rubber  
**Reinforcement:** Textile braid  
**External layer:** Black CR/SBR compound  
**Working temp.:** From -40°C up to +80°C

Delivery hose designed to transfer unleaded fuel (EN 228:2008), diesel oil (EN 590:2010), heating oil (DIN 51 603 part 1-5) and air. Internal layer is conductive -  $R < 10^6 \Omega/m$  according to EN ISO 8031:1997.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SP-TU25-06	6	14	25	80	40	0.17	100
SP-TU25-08	8	16	25	80	50	0.19	100
SP-TU25-10	10	18	25	80	60	0.23	50
SP-TU25-13	13	21	25	80	80	0.28	50
SP-TU25-16	16	25	25	80	100	0.38	50
SP-TU25-19	19	29	25	80	120	0.50	50
SP-TU25-25	25	36	25	80	150	0.73	50



#### FUB

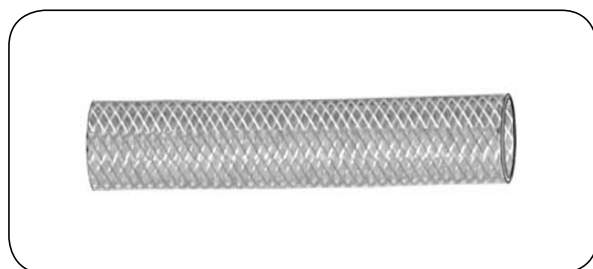
**Internal layer:** Black NBR rubber  
**Reinforcement:** Textile braid  
**External layer:** Black CR/NBR compound  
**Working temp.:** From -40°C up to +100°C  
 (for fuel from -30°C up to +70°C)

Delivery hose designed to transfer unleaded fuel (EN 228:2008), diesel oil (EN 590:2010). Suitable for fuel with methyl alcohol content up to 10%.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SP-FUB-03,2	3.2	9.2	12	40	38	0.08	50
SP-FUB-03,5	3.5	9.5	12	40	42	0.08	50
SP-FUB-04	4	10	12	40	48	0.08	50
SP-FUB-04,5	4.5	10.5	12	40	54	0.09	50
SP-FUB-05	5	11	12	40	60	0.10	50
SP-FUB-05,5	5.5	11.5	12	40	66	0.10	50
SP-FUB-06	6	12	12	40	72	0.10	50
SP-FUB-06,3	6.3	12.3	12	40	72	0.10	50
SP-FUB-07	7	13	12	40	84	0.12	50
SP-FUB-07,5	7.5	13.5	12	40	90	0.12	50
SP-FUB-08	8	14	12	40	96	0.13	50
SP-FUB-09	9	15	12	40	108	0.14	50
SP-FUB-09,5	9.5	15.5	12	40	114	0.15	50
SP-FUB-10	10	16	12	40	120	0.15	50
SP-FUB-11	11	17	12	40	132	0.16	50
SP-FUB-12	12	19	12	40	144	0.21	50

## INDUSTRIAL HOSES - petrochemical

### General purpose hoses for fuel and oil



#### TRICOFUEL®

**Internal layer:** Transparent, green PVC

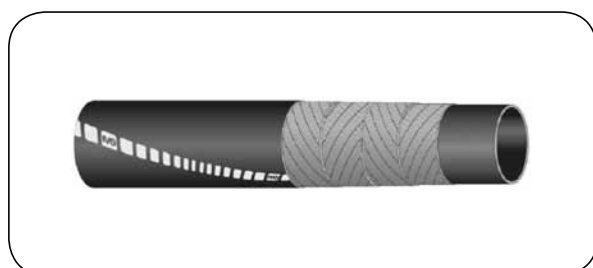
**Reinforcement:** Polyester braid

**External layer:** Transparent, green PVC

**Working temp.:** From -15°C up to +60°C

Flexible delivery hose designed for oil and petrochemical products. Widely used in fuel installations, pumps and heaters. The material of the hose is particularly resistant to plasticizer wash-out.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TR-TRICOFUEL-06	6.3	11	13	39	22	0.08	25
TR-TRICOFUEL-08	8	14	13	39	28	0.13	25
TR-TRICOFUEL-10	10	16	10	30	35	0.15	25
TR-TRICOFUEL-12	12	19	10	30	42	0.21	25
TR-TRICOFUEL-15	15	23	10	30	52.5	0.29	25
TR-TRICOFUEL-20	20	28	10	30	70	0.38	25
TR-TRICOFUEL-25	25	32.5	8	24	87.5	0.42	25
TR-TRICOFUEL-30	30	39	8	24	105	0.61	25



#### OIL COMPRESSOR®

**Internal layer:** Black synthetic rubber

**Reinforcement:** Synthetic braid

**External layer:** Blue, self-extinguishing synthetic rubber

**Working temp.:** From -30°C up to +130°C (with peaks up to +150°C)

Robust flexible hose used for oil (except ester-based products), hot air and diluted chemical products. External layer resistant to abrasion and weather conditions. External layer compliant with MSHA standard.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-COMPRESSOR-13	13	22	40	120	0.32	120
IV-COMPRESSOR-19	19	31	40	120	0.56	120
IV-COMPRESSOR-25	25	37	40	120	0.70	120
IV-COMPRESSOR-32	32	46	40	120	1.10	120
IV-COMPRESSOR-38	38	55	40	120	1.49	120
IV-COMPRESSOR-51	51	67	40	120	1.79	120

## INDUSTRIAL HOSES - petrochemical

### General purpose hoses for fuel and oil

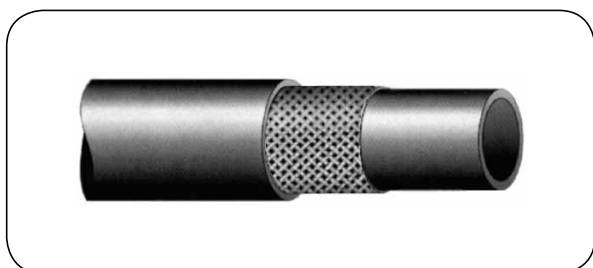


#### SAE 100 R4

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C

Robust suction-delivery hose designed to transfer liquid petroleum products with aromatic content up to 30%. In particular used in hydraulic system as an oil return hose. Fulfills SAE 100 R4 standards. External layer resistant to abrasion, oil mist and weather conditions.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-SAE100R4-19	19	30	21	94	125	0.61	120
IV-SAE100R4-25	25	38	17	71	152	0.90	120
IV-SAE100R4-30	30	41	17	60	185	0.91	120
IV-SAE100R4-32	32	43	14	56	200	0.96	120
IV-SAE100R4-35	35	47	13	52	230	1.17	120
IV-SAE100R4-38	38	49.5	10	43	250	1.26	120
IV-SAE100R4-40	40	53	10	35	255	1.44	120
IV-SAE100R4-42	42	54	10	35	260	1.37	120
IV-SAE100R4-45	45	56.5	10	35	280	1.41	120
IV-SAE100R4-51	51	64	7	30	305	1.78	120



#### HW - R6

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Synthetic braid  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C

**Characteristics:** Delivery hose used in low-pressure hydraulic installations and to transfer hydraulic fluids, hydrocarbons, oils, fats, air water, etc. Excellent resistance to weather conditions, mineral and synthetic oils.

**Standards:** According to SAE 100 R6, EN 854 R6 standards.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-R6-06	6.4	12.3	28	112	65	0.100
HW-R6-08	7.9	13.9	28	112	80	0.125
HW-R6-10	9.5	15.5	28	112	80	0.150
HW-R6-13	12.7	19	28	112	100	0.200
HW-R6-16	15.9	22.6	24	96	125	0.250
HW-R6-19	19	25.8	21	84	150	0.300
HW-R6-25	25.4	33.2	9	36	170	0.450



# INDUSTRIAL HOSES - petrochemical

## General purpose hoses for fuel and oil

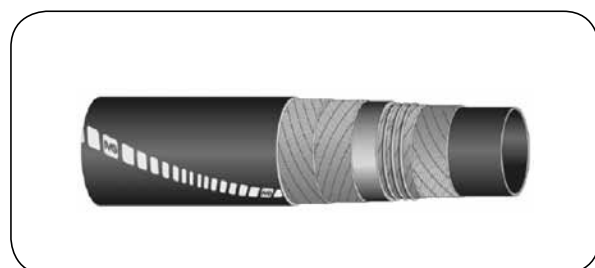


### POSEIDON®

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Synthetic braid  
**External layer:** Black, self-extinguishing synthetic rubber  
**Working temp.:** From -30°C up to +100°C (EX: from -20°C up to +100°C)

Softwall, flexible delivery hose designed for fuel systems on boats, motor boats, yachts, etc. Complies with ISO 7840:13 A1 E10/B10, CE 94/25, SAE J 1527:11 USCG A1 type, approved by R.I.N.A.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-POSEIDON-EX-06	6	14	3.4	13.6	0.21	100
IV-POSEIDON-EX-08	8	16	3.4	13.6	0.25	100
IV-POSEIDON-EX-10	10	19	3.4	13.6	0.34	60
IV-POSEIDON-EX-13	13	22	2.5	10	0.41	60
IV-POSEIDON-EX-16	16	25	2.5	10	0.48	60
IV-POSEIDON-EX-19	19	28	2.5	10	0.55	40
IV-POSEIDON-22	22	32.5	10	30	0.58	120
IV-POSEIDON-25	25	35.5	10	30	0.64	120
IV-POSEIDON-30	30	40.5	10	30	0.75	120
IV-POSEIDON-32	32	42.5	10	30	0.79	120
IV-POSEIDON-35	35	45.5	10	30	0.85	120
IV-POSEIDON-38	38	48.5	10	30	0.92	120
IV-POSEIDON-40	40	50.5	10	30	0.94	120
IV-POSEIDON-45	45	55.5	10	30	1.04	120
IV-POSEIDON-50	50	60.5	10	30	1.14	120
IV-POSEIDON-60	60	71.5	10	30	1.52	120



### POSEIDON / LL®

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Black, self-extinguishing synthetic rubber  
**Working temp.:** From -30°C up to +100°C

Softwall, flexible suction-delivery hose designed for fuel systems on boats, motor boats, yachts, etc. Complies with ISO 7840:13 A1 E10/B10, CE 94/25, SAE J 1527:11 USCG A1 type, approved by R.I.N.A.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-POSEIDON-LL-19	19	30.5	10	30	57	0.70	120
IV-POSEIDON-LL-25	25	36.5	10	30	75	0.86	120
IV-POSEIDON-LL-35	35	47	10	30	105	1.21	120
IV-POSEIDON-LL-38	38	50	10	30	114	1.29	120
IV-POSEIDON-LL-45	45	58	10	30	135	1.64	120
IV-POSEIDON-LL-50	50	63	10	30	150	1.79	120
IV-POSEIDON-LL-63	63.5	77	10	30	190	2.45	120

## INDUSTRIAL HOSES - petrochemical

### Re-fueling and transfer hoses for fuel and oil



#### SPIRABEL® OIL

**Material:** Blue PVC  
**Reinforcement:** Rigid PVC wire helix  
**Working temp.:** From -25°C up to +60°C

Lightweight, very flexible, durable suction-delivery hose designed to convey mineral and synthetic oils as well as some other hydrocarbons.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TR-SPIRABEL-OIL-025	25	33	5	0.95	88	0.49	30
TR-SPIRABEL-OIL-032	32	40	5	0.95	112	0.59	30
TR-SPIRABEL-OIL-038	38	46	5	0.95	133	0.72	30
TR-SPIRABEL-OIL-051	51	60.2	5	0.95	179	1.11	30
TR-SPIRABEL-OIL-063	63	73	4	0.9	221	1.47	30
TR-SPIRABEL-OIL-076	76	86.6	4	0.9	266	1.78	30
TR-SPIRABEL-OIL-102	102	114.6	3	0.85	357	2.82	30
TR-SPIRABEL-OIL-152	152	166	2	0.7	680	4.82	20



#### TECHNOBEL PU

**Internal layer:** Transparent PU  
**Reinforcement:** Polyester braid  
**External layer:** Black PVC  
**Working temp.:** From -15°C up to +60°C

Very lightweight hose with small bending radius. Resistant to kinking. External layer resistant to oils, hydrocarbons and many organic solvents. The external layer is resistant to hydrocarbon mist and solvent mist produced e.g. during spray painting. Used for pneumatic tools, spray guns, for painting, transfer of fairly abrasive powders or granules, plant protection products, insecticides etc. Suitable for hose reels.

code	I.D. [mm]	O.D. [mm]	working pressure 20°C [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TR-TECHNOBEL-PU-06	6	11	20	40	0.09	50
TR-TECHNOBEL-PU-08	8	14	20	55	0.13	25
TR-TECHNOBEL-PU-09	9	15	20	60	0.15	50
TR-TECHNOBEL-PU-10	10	16	20	65	0.16	25
TR-TECHNOBEL-PU-13	12.7	19	20	80	0.20	25
TR-TECHNOBEL-PU-16	16	23	20	110	0.28	25
TR-TECHNOBEL-PU-19	19	26	20	140	0.32	25
TR-TECHNOBEL-PU-25	25	33	15	180	0.49	25
TR-TECHNOBEL-PU-32	32	41	12	235	0.67	25

## INDUSTRIAL HOSES - petrochemical

### Re-fueling and transfer hoses for fuel and oil



#### VACUPRESS OIL

**Internal layer:** PVC/PU/NBR compound

**Reinforcement:** Polyester braid, steel wire helix

**External layer:** PVC/PU/NBR compound

**Working temp.:** From -25°C up to +55°C

Robust, flexible, abrasion resistant suction-delivery hose designed to transfer hydraulic oils and fuels. Widely used in tank trucks to deliver heating oil to central heating systems of many households. Hoses with diameters 76 ÷ 102 mm have antistatic wires and polyurethane external layer.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
ME-VACUPROIL-019	19	28	16	48	0.9	70	0.45	60
ME-VACUPROIL-025	25	35.6	16	48	0.9	80	0.64	60
ME-VACUPROIL-032	32	42.6	16	48	0.9	100	0.80	60
ME-VACUPROIL-035	35	48	14	42	0.9	120	1.05	60
ME-VACUPROIL-038	38	51	14	42	0.9	125	1.20	40
ME-VACUPROIL-040	40	53	14	42	0.9	130	1.25	40
ME-VACUPROIL-045	45	58	12	36	0.9	140	1.34	40
ME-VACUPROIL-050	50	63	12	36	0.9	150	1.73	40
ME-VACUPROIL-060	60	74	12	36	0.9	180	1.95	40
ME-VACUPROIL-063	63	77	12	36	0.9	190	2.03	40
ME-VACUPROIL-076	76	90.5	10	30	0.9	210	2.70	30
ME-VACUPROIL-080	80	94.5	10	30	0.9	220	2.80	30
ME-VACUPROIL-090	90	106	10	30	0.9	250	3.25	30
ME-VACUPROIL-102	102	117.5	10	30	0.9	300	3.70	30



#### FLEXSTEEL® VAPOR ASSIST

**Internal layer:** Black NBR rubber

**Reinforcement:** Steel wire braid

**External layer:** Futurin™ synthetic rubber

**Working temp.:** From -40°C up to +60°C

Hose developed to refuel vehicles with petrol at the petrol stations. During refuelling, a pump in the dispenser pulls the petrol vapours away from the tank through the vehicle fill pipe. Special construction of the hose provides excellent kink resistance and long service life. Supplied only as a complete hose assembly with M34x1.5 male thread fittings made from chrome-plated brass. The internal hose is made from nylon. Manufactured according to EN 13483.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	length [m]
GY-VASSIST-019-4	19.1	28.7	16	300	130	4
GY-VASSIST-019-5						5
GY-VASSIST-019-6						6

## INDUSTRIAL HOSES - petrochemical

### Re-fueling and transfer hoses for fuel and oil



#### AVIO GLOBAL C

**Internal layer:** Black NBR rubber  
**Reinforcement:** Synthetic braid  
**External layer:** Black CR rubber  
**Working temp.:** From -25°C up to +70°C

Delivery hose developed to transfer jet fuel A1 (direct refuelling of aircrafts) and liquid petrochemical products with aromatic content up to 50%. Suitable for hose reels application. The external layer resistant to abrasion, oil and weather conditions. Complies with BS 3158, API 1529, EN 1361, AS 2683, VG 95955, NFPA 407.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-AVIO-C-019	19	32.5	20	80	0.64	60
IV-AVIO-C-025	25	38.5	20	80	0.79	60
IV-AVIO-C-032	32	45.5	20	80	0.97	60
IV-AVIO-C-038	38	52	20	80	1.15	60
IV-AVIO-C-050	50	68	20	80	1.93	60
IV-AVIO-C-063	63.5	81	20	80	2.28	60
IV-AVIO-C-075	75	92.5	20	80	2.65	60
IV-AVIO-C-100	100	119	20	80	3.67	60



#### AVIO GLOBAL E

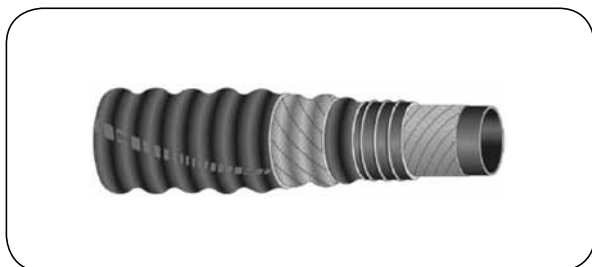
**Internal layer:** Black NBR rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Black CR rubber  
**Working temp.:** From -25°C up to +70°C

Suction-delivery hose designed to transfer jet fuel A1 and liquid petrochemical products with aromatic content up to 50%. The external layer is antistatic, resistant to abrasion, oil and weather conditions. The hose features copper wires to ensure electrical conductivity. Not suitable for direct refuelling of aircrafts (check AVIO GLOBAL C). Complies with BS 3158, API 1529, EN 1361, AS 2683, VG 95955, NFPA 407. Vacuum: 0.85 bar.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-AVIO-E-025	25	39	20	80	0.68	60
IV-AVIO-E-038	38	52	20	80	1.56	60
IV-AVIO-E-050	50	67.5	20	80	1.98	60
IV-AVIO-E-063	63.5	82.5	20	80	2.12	60
IV-AVIO-E-075	75	94	20	80	2.41	60
IV-AVIO-E-100	100	118.5	20	80	3.16	60

## INDUSTRIAL HOSES - petrochemical

### Reloading hoses for fuel and oil



#### IVALO®

**Internal layer:** Black NBR rubber

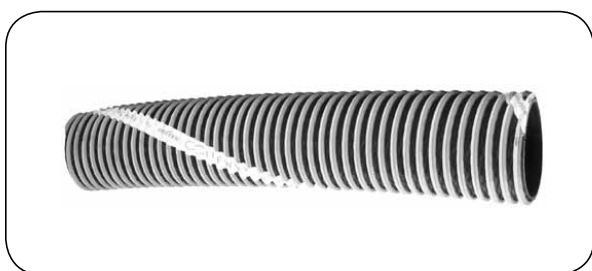
**Reinforcement:** Synthetic braid, steel wire helix

**External layer:** Black, corrugated, self-extinguishing CR rubber

**Working temp.:** From -30°C up to +120°C

Lightweight, flexible suction-delivery hose designed to transfer liquid petrochemical products with aromatic content up to 30% (except ester-based products). External layer complies with ASTM C 542, resistant to abrasion, oil, ozone and weather conditions. Vacuum 0.5 bar.

code	I.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-IVALO-016	16	5	15	48	0.35	60
IV-IVALO-019	19	5	15	50	0.40	60
IV-IVALO-022	22	5	15	55	0.45	60
IV-IVALO-025	25	5	15	60	0.50	60
IV-IVALO-032	32	5	15	80	0.60	60
IV-IVALO-035	35	5	15	90	0.67	60
IV-IVALO-038	38	5	15	95	0.70	60
IV-IVALO-045	45	5	15	110	0.80	60
IV-IVALO-051	51	5	15	130	1.00	60
IV-IVALO-063	63	5	15	160	1.30	60
IV-IVALO-076	76	3	9	190	1.70	60
IV-IVALO-090	90	3	9	230	2.00	60
IV-IVALO-102	102	3	9	260	2.40	60



#### INFINITY™

**Internal layer:** Black NBR rubber

**Reinforcement:** Textile braid

**External layer:** Black Chemivic™ synthetic rubber + orange-green Pliovic® external helix

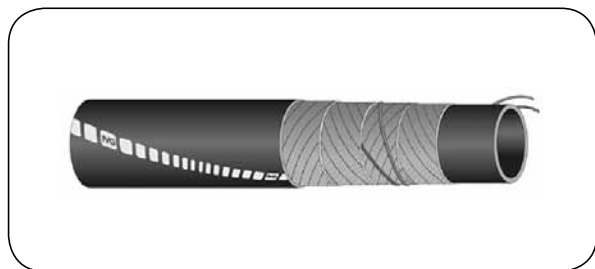
**Working temp.:** From -40°C up to +70°C

Suction-delivery hose designed to transfer liquid petrochemical products with aromatic content up to 60%. Very lightweight, flexible and easy to handle due to the exclusive construction based on the double external helix. The hose features copper wires to ensure electrical conductivity.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
GY-INFINITY-050	51	71	10	0.77	38	1.52	30.5
GY-INFINITY-075	76	96	6.9	0.77	50	2.18	30.5
GY-INFINITY-100	102	122	5.2	0.77	65	2.57	30.5

## INDUSTRIAL HOSES - petrochemical

### Reloading hoses for fuel and oil

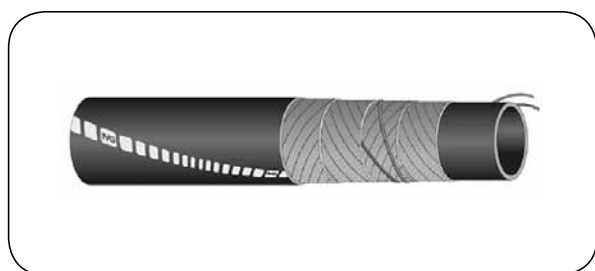


#### AUSTRALIA®

**Internal layer:** Black NBR compound  
**Reinforcement:** Synthetic braid  
**External layer:** Black CR compound  
**Working temp.:** From -20°C up to +70°C

Delivery hose designed to transfer liquid petrochemical products with aromatic content up to 30%. The hose features copper wires to ensure electrical conductivity. External layer resistant to abrasion, oil and weather conditions.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-AUSTRALIA-010	10	17	10	30	0.20	120
IV-AUSTRALIA-013	13	20	10	30	0.25	120
IV-AUSTRALIA-016	15	23	10	30	0.31	120
IV-AUSTRALIA-019	19	27	10	30	0.39	120
IV-AUSTRALIA-022	22	30	10	30	0.59	120
IV-AUSTRALIA-025	25	35	10	30	0.66	120
IV-AUSTRALIA-028	28	38	10	30	0.72	120
IV-AUSTRALIA-032	32	42	10	30	0.82	120
IV-AUSTRALIA-035	35	45	10	30	0.86	120
IV-AUSTRALIA-038	38	47	10	30	0.88	120
IV-AUSTRALIA-040	40	50	10	30	0.90	120
IV-AUSTRALIA-045	45	55	10	30	1.01	120
IV-AUSTRALIA-051	51	61	10	30	1.12	120
IV-AUSTRALIA-060	60	73	10	30	1.82	120
IV-AUSTRALIA-063	63.5	74	10	30	1.46	120
IV-AUSTRALIA-076	76	89	10	30	2.14	120
IV-AUSTRALIA-090	90	105	10	30	2.87	120
IV-AUSTRALIA-102	102	115.5	10	30	2.97	120



#### AUSTRALIA® EN1360

**Internal layer:** Black NBR compound  
**Reinforcement:** Synthetic braid  
**External layer:** Black CR compound  
**Working temp.:** From -20°C up to +70°C

Delivery hose designed to transfer liquid petrochemical products with aromatic content up to 30%. Internal layer is antistatic -  $R < 1 \text{ MQ/m}$ . External layer is resistant to abrasion, oil and weather conditions. The hose has copper wire to ensure electrical conductivity between hose ends ( $R < 10^2 \text{ } \Omega/\text{lgth.}$ ). Complies with EN1360:05 standard type 1 category M.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-AUSTRALIA-EN-016	16	28	16	48	0.51	120
IV-AUSTRALIA-EN-019	19	31	16	48	0.58	120
IV-AUSTRALIA-EN-025	25	37	16	48	0.72	120

## INDUSTRIAL HOSES - petrochemical

### Reloading hoses for fuel and oil

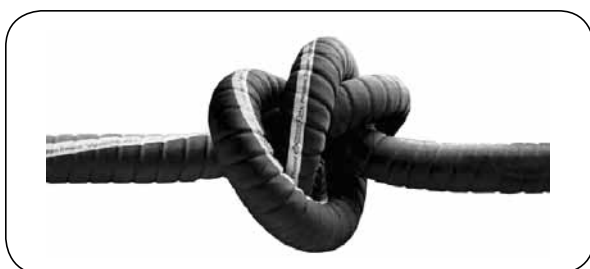


#### CARACAS®

**Internal layer:** Black NBR rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Black, corrugated CR rubber  
**Working temp.:** From -20°C to +70°C (CARACAS 30%)  
 From -54°C to +70°C (CARACAS 50%)

Lightweight, flexible suction-delivery hose designed to transfer liquid petrochemical products. The hose features copper wires to ensure electrical conductivity. Excellent for reloading applications. External layer resistant to abrasion, oil, ozone and weather conditions.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
for products with up to 30% aromatic contents								
IV-CARACAS-032	32	43.5	6	18	0.54	90	0.93	60
IV-CARACAS-038	38	50	6	18	0.54	105	1.19	60
IV-CARACAS-051	51	63	6	18	0.54	135	1.54	60
IV-CARACAS-063	63.5	77	6	18	0.54	180	2.27	60
IV-CARACAS-076	76	90	6	18	0.54	210	2.65	60
IV-CARACAS-102	102	117	6	18	0.54	275	3.68	60
for products with up to 50% aromatic contents								
IV-CARACAS50-051	51	62	6	18	0.54	125	1.39	60
IV-CARACAS50-063	63.5	77	6	18	0.54	165	1.77	60
IV-CARACAS50-076	76	89	4	12	0.54	190	2.20	60
IV-CARACAS50-102	102	117	4	12	0.54	250	2.90	60



#### EXTREMEFLEX®

**Internal layer:** Black NBR rubber  
**Reinforcement:** Textile braid, steel wire helix  
**External layer:** Black, corrugated Chemivic™ rubber compound  
**Working temp.:** From -40°C up to +93°C

Extremely flexible, suction-delivery hose developed to transfer liquid petrochemical products with aromatic content up to 60%. A corrugated external layer provides perfect abrasion resistance and ease while dragging the hose. Also available with a red external layer.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
GY-EXTREMEFLEX-019	19.1	30.5	17	0.9	19.5	0.65	30.5
GY-EXTREMEFLEX-025	25.4	36.8	17	0.9	25.4	0.81	30.5
GY-EXTREMEFLEX-038	38.1	48.5	17	0.9	38.1	1.08	30.5
GY-EXTREMEFLEX-051	50.8	61.8	17	0.9	50.8	1.43	30.5
GY-EXTREMEFLEX-063	63.5	76.1	13	0.9	63.5	2.10	30.5
GY-EXTREMEFLEX-076	76.2	88.8	13	0.9	76.2	2.51	30.5
GY-EXTREMEFLEX-102	101.6	115.7	10	0.9	101.6	3.61	30.5

## INDUSTRIAL HOSES - petrochemical

### Reloading hoses for fuel and oil



#### RAFFINERIA / CLC

**Internal layer:** Black, antistatic NBR rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Black, corrugated synthetic rubber  
**Working temp.:** From -30°C up to +80°C (with peaks up to +120°C depending on medium)

Lightweight, flexible, suction-delivery hose developed to transfer liquid petrochemical products with aromatic content up to 50%. Antistatic internal layer  $R < 10^6 \Omega$ . The hose has copper wire to ensure electrical conductivity between hose ends. Excellent solution for loading and unloading systems and other applications that require small bending radius. External layer is resistant to abrasion, mineral oils, ozone, ageing, weather conditions and brief contact with hydrocarbons. Vacuum 0.9 bar.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
MT-RAFFINERIA-CLC-019	19	30	16	48	60	0.56	40
MT-RAFFINERIA-CLC-025	25	36	16	48	75	0.58	40
MT-RAFFINERIA-CLC-032	32	43	16	48	100	0.90	40
MT-RAFFINERIA-CLC-038	38	51	16	48	120	1.10	40
MT-RAFFINERIA-CLC-040	40	53	16	48	120	1.15	40
MT-RAFFINERIA-CLC-045	45	59	16	48	150	1.48	40
MT-RAFFINERIA-CLC-050	50	64	16	48	180	1.60	40
MT-RAFFINERIA-CLC-063	63.5	77.5	12	36	250	2.05	40
MT-RAFFINERIA-CLC-070	70	85	12	36	280	2.43	40
MT-RAFFINERIA-CLC-076	76	91	10	30	300	2.60	40
MT-RAFFINERIA-CLC-080	80	95	10	30	320	2.73	40
MT-RAFFINERIA-CLC-102	102	122	10	30	400	3.73	40



## INDUSTRIAL HOSES - petrochemical

### Reloading hoses for fuel and oil



#### OILSTAR / SD

**Internal layer:** Black NBR rubber

**Reinforcement:** Synthetic braid, steel wire helix

**External layer:** Black SBR/NBR rubber

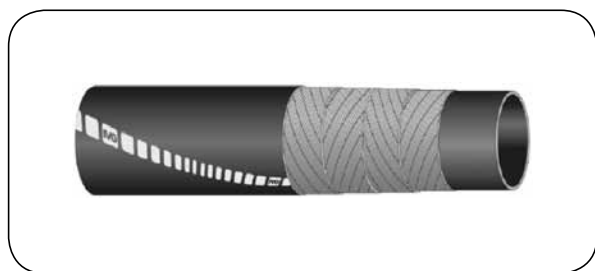
**Working temp.:** From -30°C up to +70°C

Robust suction-delivery hose designed to transfer fuel, liquid petrochemical products with aromatic content up to 50%. The hose features two copper wires to ensure electrical conductivity. Conductive external layer -  $R < 10^6 \Omega/m$ , resistant to abrasion, oil, ozone and weather conditions. Vacuum 0.9 bar.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SO-OILSTAR-SD-019	19	29	10	30	95	0.55	40
SO-OILSTAR-SD-025	25	35	10	30	125	0.69	40
SO-OILSTAR-SD-032	32	42	10	30	160	0.84	40
SO-OILSTAR-SD-038	38	48	10	30	190	1.05	40
SO-OILSTAR-SD-040	40	50	10	30	200	1.10	40
SO-OILSTAR-SD-045	45	55	10	30	225	1.19	40
SO-OILSTAR-SD-051	51	61	10	30	255	1.33	40
SO-OILSTAR-SD-060	60	71	10	30	300	1.81	40
SO-OILSTAR-SD-063	63	75	10	30	315	2.05	40
SO-OILSTAR-SD-076	76	88	10	30	380	2.42	40
SO-OILSTAR-SD-080	80	92	10	30	400	2.54	40
SO-OILSTAR-SD-090	90	104	10	30	450	3.45	40
SO-OILSTAR-SD-100	100	114	10	30	500	3.90	40
SO-OILSTAR-SD-110	110	124	10	30	550	4.59	40
SO-OILSTAR-SD-150	150	170	10	30	750	9.49	20

## INDUSTRIAL HOSES - petrochemical

### Reloading hoses for fuel and oil



#### GENOVA® GLOBAL „OHM”

**Internal layer:** Black NBR1 rubber  
**Reinforcement:** Synthetic braid  
**External layer:** Black, antistatic synthetic rubber  
**Working temp.:** From -20°C up to +70°C

Delivery hose developed to transfer liquid petrochemical products with aromatic content up to 50%. The hose features copper wires to ensure electrical conductivity. External layer resistant to abrasion, oil, ozone and weather conditions. Complies with: EN 12115:11, EN 1761, ISO 2929, TRbF. Electrical resistance: OHM/T - electrically conductive hose,  $R \leq 10^6 \Omega/\text{lgth}$ . Tested and approved by INERIS for work in ATEX potentially explosive atmospheres.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-GENOVA-EN-019	19	30	16	64	0.51	120
IV-GENOVA-EN-025	25	37	16	64	0.67	120
IV-GENOVA-EN-032	32	45	16	64	0.88	120
IV-GENOVA-EN-038	38	51	16	64	1.04	120
IV-GENOVA-EN-050	50	66	16	64	1.73	120
IV-GENOVA-EN-063	63.5	79.5	16	64	2.10	120
IV-GENOVA-EN-075	75	91	16	64	2.44	120
IV-GENOVA-EN-100	100	116	16	64	2.97	120



#### GENOVA / LL® GLOBAL „OHM”

**Internal layer:** Black NBR1 rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Black, antistatic synthetic rubber  
**Working temp.:** From -20°C up to +70°C

Suction-delivery hose developed to transfer liquid petrochemical products with aromatic content up to 50%. The hose features copper wires to ensure electrical conductivity. The external layer resistant to abrasion, oil, ozone and weather conditions. Complies with: EN 12115:11, EN 1761, ISO 2929, TRbF. Electrical resistance: OHM/T - electrically conductive hose,  $R \leq 10^6 \Omega/\text{lgth}$ . Tested and approved by INERIS for work in ATEX potentially explosive atmospheres. Vacuum 0.9 bar.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-GENOVA-LL-EN-019	19	32	16	64	114	0.77	120
IV-GENOVA-LL-EN-025	25	38	16	64	150	0.94	120
IV-GENOVA-LL-EN-032	32	45	16	64	176	1.14	120
IV-GENOVA-LL-EN-038	38	52	16	64	228	1.46	120
IV-GENOVA-LL-EN-050	50	65.5	16	64	275	2.04	120
IV-GENOVA-LL-EN-063	63.5	78.5	16	64	285	2.59	120
IV-GENOVA-LL-EN-075	75	90	16	64	337	3.09	120
IV-GENOVA-LL-EN-100	100	116	16	64	450	4.42	120

## INDUSTRIAL HOSES - petrochemical

### Reloading hoses for fuel and oil



#### FUEL SOFTWALL®

**Internal layer:** Black PVC/NBR compound

**Reinforcement:** Synthetic braid

**External layer:** Black CR compound

**Working temp.:** From -25°C up to +90°C

Delivery hose designed to transfer liquid petrochemical products with aromatic content up to 50%. The hose features copper wires to ensure electrical conductivity. Flame retardant external layer resistant to abrasion, oil, sea water and weather conditions. It is a specialist hose designed to serve oil-rigs. Widely used in the North Sea.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	standard length [m]
IV-FUEL-SW-076	76	91.5	17	60	120
IV-FUEL-SW-102	102	118	17	60	120
IV-FUEL-SW-127	127	145	17	60	120
IV-FUEL-SW-152	152	174	17	60	120
IV-FUEL-SW-203	203	225	17	60	60



#### FUEL HARDWALL®

**Internal layer:** Black PVC/NBR compound

**Reinforcement:** Synthetic braid, steel wire helix

**External layer:** Black CR compound

**Working temp.:** From -25°C up to +90°C  
From -20°C up to +90°C (FUEL/HW-30)

Suction-delivery hose designed to transfer liquid petrochemical products with aromatic content up to 50%. The hose features copper wires to ensure electrical conductivity. Flame retardant external layer resistant to abrasion, oil, sea water and weather conditions. The hose has a tensile strength of up to 4 tons. It is a specialist hose designed to serve oil-rigs. Widely used in the North Sea.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	standard length [m]
FUEL HARDWALL					
IV-FUEL-HW-076	76	94	17	60	120
IV-FUEL-HW-102	102	120.5	17	60	120
IV-FUEL-HW-127	127	151	17	60	60
IV-FUEL-HW-152	152	181.5	17	60	60
IV-FUEL-HW-203	203	238	17	60	60
FUEL HARDWALL-30					
IV-FUEL-HW-30-102	102	127	30	90	60
IV-FUEL-HW-30-127	127	155.5	30	90	60
IV-FUEL-HW-30-152	152	188	30	90	60

## INDUSTRIAL HOSES - petrochemical

### Hot asphalt hoses



#### SEVEN CORD®

**Internal layer:** Black polyacrylic compound

**Reinforcement:** Steel braid

**External layer:** Black polyacrylic compound

**Working temp.:** From -15°C up to +200°C

Robust, flexible delivery hose designed to transfer liquid asphalt. Excellent for reloading applications. External layer resistant to abrasion, oil, ozone, tar and weather conditions.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-SEVENCORD-13	13	25	10	40	104	0.55	120
IV-SEVENCORD-16	16	28	10	40	128	0.63	120
IV-SEVENCORD-19	19	31	10	40	152	0.72	120
IV-SEVENCORD-25	25	39	10	40	200	1.23	120
IV-SEVENCORD-32	32	45	10	40	256	1.19	120
IV-SEVENCORD-40	40	54	10	40	300	1.53	120
IV-SEVENCORD-51	51	65	10	40	408	1.89	120



#### SEVEN®

**Internal layer:** Black polyacrylic compound

**Reinforcement:** Steel braid, steel wire helix

**External layer:** Black synthetic rubber

**Working temp.:** From -15°C up to +200°C

Robust, flexible suction-delivery hose designed to transfer liquid asphalt. Excellent for reloading applications. External layer resistant to abrasion, oil, ozone, tar and weather conditions. Available manufactured according to EN 13482:2001 (diameters DN51, DN63, DN76, DN102).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-SEVEN-019	19	32	10	40	75	0.93	120
IV-SEVEN-025	25	40	10	40	100	1.24	120
IV-SEVEN-032	32	48	10	40	125	1.71	120
IV-SEVEN-038	38	53.5	10	40	150	1.92	120
IV-SEVEN-051	51	69.5	10	40	200	2.66	120
IV-SEVEN-063	63.5	81	10	40	250	3.12	120
IV-SEVEN-076	76	95.5	10	40	300	4.95	120
IV-SEVEN-090	90	109.5	10	40	330	5.73	60
IV-SEVEN-102	102	125	10	40	400	7.82	60

# INDUSTRIAL HOSES - petrochemical

## Oil exploration hoses



### ROTARY VIBRATOR / DRILLING

**Internal layer:** Modified NBR rubber  
**Reinforcement:** Multiple layers of high tensile plated steel cables and polyester braid embedded in rubber  
**External layer:** Modified NBR rubber  
**Working temp.:** From -20°C up to +82°C

Heavy duty, flexible hose designed to crude oil, drilling fluid and bailings. Widely used as a flexible connection between standpipe and swivel (ROTARY DRILLING) or between pump and standpipe (ROTARY VIBRATOR). External layer resistant to abrasion, corrosion, cutting, oil and water. Available as complete API 7K certified hose assemblies with HAMMER LUG unions, API flanges or NPT threads.

I.D. [mm]	O.D. [mm]	working pressure		test pressure		bursting pressure		API class	bending radius [mm]	max. length [m]
		[bar]	[PSI]	[bar]	[PSI]	[bar]	[PSI]			
65	105	344	5000	689	10000	861	12500	D	914	27
75	117								1219	
90	133								1371	
100	142								1371	
65	131	517	7500	1034	15000	1292	18750	E	1219	
75	143								1219	
90	153								1371	
100	164								1524	



### CHOKE & KILL

**Internal layer:** Viton  
**Reinforcement:** Multiple layers of high tensile plated steel cables and polyester braid embedded in rubber  
**External layer:** Modified NBR rubber  
**Working temp.:** From -20°C up to +93°C

Hose designed to BOP (Blow Out Preventer) systems to control well kicks during exploration work. During drilling, pockets of high pressure gas may get into the drill string. As the gas moves upward it expands making the drilling mud too lightweight to control pressure in the hole. If the kick is too strong, it can blow out the well. To prevent this high pressure, mud, up to 15.000 PSI, is pumped down the choke line to force the gas back into the formation. If this is not successful, high pressure cement, up to 15.000 PSI, is pumped down the well through the kill line and seals it permanently.

I.D. [mm]	O.D. [mm]	working pressure		test pressure		bursting pressure		bending radius [mm]	max. length [m]
		[bar]	[PSI]	[bar]	[PSI]	[bar]	[PSI]		
65	105	344	5000	689	10000	1034	15000	914	27
75	117							1219	
90	133							1371	
100	162							1524	
65	130	689	10000	1034	15000	1551	22500	1219	
75	143							1219	
90	153							1371	
65	143	1034	15000	1551	22500	2326	33750	1524	
75	156							1524	

### Oil exploration hoses

Complete hose assemblies for drilling equipment



Hose assemblies designed for drilling applications are pressure tested and supplied with vulcanised or specially crimped fittings.

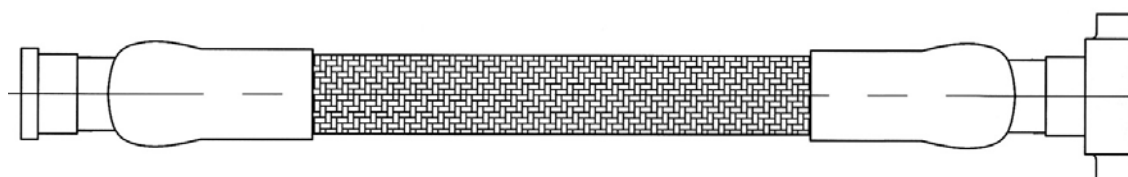
Most often used fittings:

- HAMMER LUG unions (fig. 602, fig.1002, fig. 1003, fig. 1502, fig. 2002, fig. 2202),
- API 16BX hub connections,
- API 6B, 6BX type flanges,
- fittings with API LPT (NPT) thread.

For HAMMER LUG unions please chapter COUPLINGS, VALVES AND CLAMPS.



Example of ROTARY DRILLING DN75 hose assembly



HAMMER LUG union  
fig. 1502 (female) 3",  
NPT female thread

ROTARY DRILLING DN75 hose  
with 3" NPT male fittings

HAMMER LUG union  
fig. 1502 (male) 3",  
NPT female thread + nut

## INDUSTRIAL HOSES - material handling



### ORINOCO 2000®

**Internal layer:** Black, antistatic SBR/NR rubber compound

**Reinforcement:** Double synthetic braid

**External layer:** Black, antistatic SBR/NR rubber compound

**Working temp.:** From -40°C up to +70°C

Heavy duty, long-lasting hose extremely resistant to abrasion. Widely used for sandblasting, shot-blasting (cast steel shot). Resistant to abrasion according to ISO 4649: 50 mm<sup>3</sup>. For application with sandblasting couplings as a standard.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-ORINOCO2000-13	13	27	12	36	0.48	120
IV-ORINOCO2000-19	19	33	12	36	0.61	120
IV-ORINOCO2000-25	25	40	12	36	0.82	120
IV-ORINOCO2000-32	32	48	12	36	1.06	120
IV-ORINOCO2000-38	38	54	12	36	1.22	120
IV-ORINOCO2000-40	40	60	12	36	1.70	120
IV-ORINOCO2000-51	51	71	12	36	2.04	120
IV-ORINOCO2000-60	60	80	12	36	2.28	120
IV-ORINOCO2000-65	65	85	12	36	2.43	120



### SM 1

**Internal layer:** Black, antistatic rubber compound

**Reinforcement:** Double synthetic braid

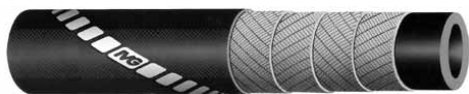
**External layer:** Black, antistatic SBR rubber

**Working temp.:** From -35°C up to +80°C

Heavy duty, long-lasting hose extremely resistant to abrasion. Widely used for sandblasting, shot-blasting (cast steel shot). Resistant to abrasion according to DIN 53516: 36 mm<sup>3</sup>. For application with sandblasting couplings as a standard.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
SP-SM1-13	13	27	12	42	0.50	40
SP-SM1-19	19	33	12	42	0.65	40
SP-SM1-25	25	39	12	42	0.80	40
SP-SM1-32	32	48	12	42	1.10	40
SP-SM1-38	38	56	12	42	1.50	40
SP-SM1-42	42	60	12	42	1.65	40

## INDUSTRIAL HOSES - material handling



### NIAGARA®

**Internal layer:** Black SBR/NR rubber compound  
**Reinforcement:** Synthetic braid  
**External layer:** Black SBR/NR rubber compound  
**Working temp.:** From -40°C up to +70°C

Hose designed to transfer cement mortar, plaster, gypsum and concrete. Antistatic, resistant to abrasion, ozone and weather conditions. Resistant to abrasion according to ISO 4649: 70 mm<sup>3</sup>. For application with mortar couplings as a standard.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-NIAGARA-25	25	38	40	120	0.68	120
IV-NIAGARA-32	32	46	40	120	0.89	120
IV-NIAGARA-35	35	49	40	120	0.95	120
IV-NIAGARA-38	38	54	40	120	1.24	120
IV-NIAGARA-51	51	68	40	120	1.71	120



### DRY ICE

**Internal layer:** Black, antistatic synthetic rubber  
**Reinforcement:** Synthetic braid  
**External layer:** Black, antistatic synthetic rubber  
**Working temp.:** Up to -55°C

Heavy duty, long-lasting hose resistant to abrasion. Widely used for dry ice blasting (dry ice blast cleaning is similar to sandblasting). Antistatic - R <10<sup>6</sup> Ω/m.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-DRYICE-16	16	28	10	40	0.43	60
IV-DRYICE-19	19	31	10	40	0.48	60



### BETONCINO

**Internal layer:** PVC layer lined with polyurethane  
**Reinforcement:** Double polyester braid  
**External layer:** PVC and polyurethane compound  
**Working temp.:** From -15°C up to +60°C

Light, flexible hose designed to deliver cement, plaster and cement mortar that are applied on walls and ceilings.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
ME-BETONCINO-25	25	37	40	100	145	0.72	30



## INDUSTRIAL HOSES - material handling



### SILOFLAT® DISCHARGE

**Internal layer:** Black NR rubber  
**Reinforcement:** Textile braid  
**External layer:** Black SBR rubber  
**Working temp.:** From -30°C up to +80°C

Hose designed for unloading of silos storing grain, dry cement, lime, etc (no pressure discharge). Electrically conductive internal layer. Resistant to abrasion according to DIN 53516:70 ÷ 80 mm<sup>3</sup>.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	standard length [m]
BG-SILOFLAT-DC-152	152	166	7	20
BG-SILOFLAT-DC-203	203	217	7	20
BG-SILOFLAT-DC-254	254	270	8	20
BG-SILOFLAT-DC-305	305	323	9	10



### CERAHOSE

**Internal layer:** Ceramic balls (3 mm diameter) embedded in NR  
**Reinforcement:** Textile braid  
**External layer:** Black NR rubber  
**Working temp.:** From -30°C up to +70°C

Delivery hose designed to convey highly abrasive materials e.g. dry cement, coal, coke, solid recovered fuels, minerals, ceramic powders, cast steel shot, glass debris or fibreglass debris. Widely used in steel mills, coke plants, power plants, cement mills, mines, glass works, insulation materials factories, etc. Hose versions supplied on special request: suction-delivery, with antistatic wire or corrugated external layer. Complete hose assemblies with vulcanized fittings are also available.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bending radius [mm]	number of braids	weight [kg/m]
SU-CERAHOSE-013	12.7	28	10	120	2	0.80
SU-CERAHOSE-016	15.9	31.5	10	150	2	0.90
SU-CERAHOSE-019	19	38	10	190	2	1.40
SU-CERAHOSE-025	25.4	45.5	10	250	2	1.80
SU-CERAHOSE-032	31.8	52	10	320	2	2.00
SU-CERAHOSE-038	38.1	58	10	380	2	2.30
SU-CERAHOSE-045	44.5	65.5	10	450	2	2.80
SU-CERAHOSE-051	50.8	76	10	500	4	4.00
SU-CERAHOSE-063	63.5	90	10	650	4	4.80
SU-CERAHOSE-076	76.2	103.5	10	750	4	5.60
SU-CERAHOSE-102	101.6	131	10	1000	4	7.90

#### A comparison of rubber and ceramic hose service lives

application	medium	life of rubber hose	life of ceramic hose
coke transfer	coke	unusable after 6 coke charges	minor signs of abrasion after 300 coke charges
shot-blasting	cast steel shot 1 ÷ 2 mm diameter	unusable after 2 months	no signs of abrasion after 10 months

## INDUSTRIAL HOSES - material handling




### SHANNON / 80 HD®

**Internal layer:** Black SBR/NR rubber compound  
**Reinforcement:** Four steel wire braids up to DN125  
 Six steel wire braids DN152  
**External layer:** Black SBR/NR rubber compound  
**Working temp.:** From -40°C up to +70°C

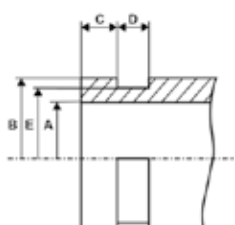
Hardwall, delivery hose designed to transfer concrete and cement mortar. Highly resistant to abrasion, ozone and weather conditions. Widely used in pumps to pour concrete into a casting location (foundations, walls, floor). Delivered as a complete hose assembly with groove couplings. When placing an order, please state: overall length, hose diameter and the size of a coupling. Resistant to abrasion according to DIN 53516: 50 mm<sup>3</sup>.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	bending radius [mm]
IV-SHAN80-051L	51	71.5	80	200	3.38	380
IV-SHAN80-065L	65	85	80	200	4.11	400
IV-SHAN80-076L	76	97	80	200	4.92	400
IV-SHAN80-100	100	124	80	200	6.87	550
IV-SHAN80-125	125	150	80	200	8.69	700
IV-SHAN80-152	152	184	80	175	14.25	800

### Groove couplings used with SHANNON® hoses


picture	code	hose DN [mm]	size [inch]	description
	IV-SHAN-ZR-ZK-051-200	51	2	Groove coupling with a hose fitting + ferrule.  Material: carbon steel. Depth of coupling hardening: 0.6 ÷ 0.8 mm Hardness: 56 ÷ 58 HRC.
	IV-SHAN-ZR-ZK-065-300	65	3	
	IV-SHAN-ZR-ZK-076-300	76	3	
	IV-SHAN-ZR-ZK-076-325	76	3.1/4	
	IV-SHAN-ZR-ZK-100-400	100	4	
	IV-SHAN-ZR-ZK-100-450	100	4.1/2	
	IV-SHAN-ZR-ZK-125-500	125	5	
	IV-SHAN-ZR-ZK-125-550	125	5.1/2	
	IV-SHAN-ZR-ZK-152-600	152	6	


### Basic dimensions of a groove coupling


picture	size [inch]	hose DN [mm]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
	2	51	50	60	16	18	57
	3	65	65	89	16	20	84
	3	76	76	89	16	20	84
	3.1/4	76	76	97	16	20	88
	4	100	100	114	16	20	108
	4.1/2	100	100	127	16	20	114
	5	125	125	141	17	20	133
	5.1/2	125	125	148	17	20	139
	6	152	150	167	17	20	159




## INDUSTRIAL HOSES - material handling

### Groove couplings used with SHANNON® hoses

picture	code	size [inch]	description
	IV-SHAN-ZR-OB-200	2	Snap clamp of a groove coupling without a gasket or a safety pin.  Material: carbon steel. Working pressure: 80 bar.
	IV-SHAN-ZR-OB-250	2.1/2	
	IV-SHAN-ZR-OB-300	3	
	IV-SHAN-ZR-OB-325	3.1/4	
	IV-SHAN-ZR-OB-400	4	
	IV-SHAN-ZR-OB-450	4.1/2	
	IV-SHAN-ZR-OB-500	5	
	IV-SHAN-ZR-OB-550	5.1/2	
	IV-SHAN-ZR-OB-600	6	

picture	code	size [inch]	description
	IV-SHAN-ZR-OU-200	2	Gasket for a snap clamp of a groove coupling.  Material: SBR rubber.
	IV-SHAN-ZR-OU-250	2.1/2	
	IV-SHAN-ZR-OU-300	3	
	IV-SHAN-ZR-OU-325	3.1/4	
	IV-SHAN-ZR-OU-400	4	
	IV-SHAN-ZR-OU-450	4.1/2	
	IV-SHAN-ZR-OU-500	5	
	IV-SHAN-ZR-OU-550	5.1/2	
	IV-SHAN-ZR-OU-600	6	

picture	code	dimensions [mm]	description
	IV-SHAN-ZR-OZ-56X6	56x6.5	Safety pin of a clamp.
	IV-SHAN-ZR-OZ-70X6	70x6.5	
	IV-SHAN-ZR-OZ-70X8	70x8	

picture	code	diameter [mm]	description
	IV-SHAN-KM-060	60	Cleaning ball for SHANNON hoses (soft).
	IV-SHAN-KM-080	80	
	IV-SHAN-KM-100	100	
	IV-SHAN-KM-125	125	
	IV-SHAN-KM-150	150	
	IV-SHAN-KS-060	60	Cleaning ball for SHANNON hoses (medium).
	IV-SHAN-KS-080	80	
	IV-SHAN-KS-100	100	
	IV-SHAN-KS-125	125	
	IV-SHAN-KS-150	150	
	IV-SHAN-KT-060	60	Cleaning ball for SHANNON hoses (hard).
	IV-SHAN-KT-080	80	
	IV-SHAN-KT-100	100	
	IV-SHAN-KT-125	125	
	IV-SHAN-KT-150	150	

## INDUSTRIAL HOSES - material handling



### PARAFLEX®

**Internal layer:** 2.4 mm layer of black rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Black, corrugated rubber  
**Working temp.:** From -40°C up to +70°C

Lightweight, suction-delivery hose designed to transfer powders, dust and other low abrasive materials. Resistant to abrasion according to ISO 4649: 100 mm<sup>3</sup>. Vacuum up to 0.6 bar.

code	I.D. [mm]	O.D. [mm]	weight [kg/m]	bending radius [mm]	standard length [m]
IV-PARAFLEX-051	51	59	0.90	130	120
IV-PARAFLEX-060	60	68	1.10	150	120
IV-PARAFLEX-080	80	88	1.40	240	120
IV-PARAFLEX-102	102	113	1.96	300	120
IV-PARAFLEX-110	110	121	1.99	330	120
IV-PARAFLEX-120	120	131	2.16	360	120
IV-PARAFLEX-127	127	138	2.28	380	120
IV-PARAFLEX-152	152	163	2.74	460	120
IV-PARAFLEX-203	203	215	4.02	810	120
IV-PARAFLEX-250	250	262	4.97	1000	120
IV-PARAFLEX-305	305	318	6.94	1220	120



### ULVAC®

**Internal layer:** Brown natural rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Black, corrugated NR/SBR rubber  
**Working temp.:** From -30°C up to +70°C

Lightweight, flexible, suction-delivery hose designed to transfer sand, grain, granulated materials, cement and other highly abrasive materials. The hose features copper wires to ensure electrical conductivity. Resistant to ozone and weather conditions. Vacuum up to 0.9 bar.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	bending radius [mm]	standard length [m]
IV-ULVAC-051	51	65	3	9	1.62	250	60
IV-ULVAC-076	76	90	3	9	2.57	450	60
IV-ULVAC-102	102	117	3	9	3.51	600	60
IV-ULVAC-127	127	145	3	9	4.82	850	60
IV-ULVAC-152	152	171	2	6	6.84	990	60

## INDUSTRIAL HOSES - material handling



### LUISIANA PU ANTISTATIC

**Internal layer:** Transparent polyurethane  
**Reinforcement:** Rigid PVC wire helix  
**External layer:** Transparent PVC  
**Working temp.:** From -5°C up to +85°C

Robust, suction-delivery hose designed to transfer products with the high coefficient of friction. Especially recommended for the transfer of sharp particles - so called reclaimed materials. There is a copper wire going around the helix that enables discharging static electrical charges when the hose is grounded ( $R = 0.075 \Omega/m$ ). The hose for heavy duty applications, particularly used in plastic processing where enhanced resistance to abrasion, perforation or cutting is needed. Meets the requirements of the European Regulation 1935/2004 CE, UE 10/2011 (simulants A, B and C).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
ME-LUISIANA-PUAS-030	30	37.5	5	150	0.45	30
ME-LUISIANA-PUAS-040	40	48	5	200	0.63	30
ME-LUISIANA-PUAS-050	50	59	4	250	0.90	30
ME-LUISIANA-PUAS-060	60	70.5	4	300	1.10	30
ME-LUISIANA-PUAS-070	70	81	4	350	1.20	30
ME-LUISIANA-PUAS-076	76	87	3.5	375	3.00	30
ME-LUISIANA-PUAS-080	80	91.5	3.5	400	1.35	30
ME-LUISIANA-PUAS-090	90	102	3.5	450	1.50	30
ME-LUISIANA-PUAS-100	100	113	3	500	1.80	30



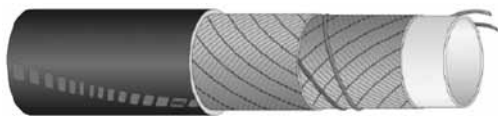
### MULTIFLEX PU AS

**Internal layer:** Blue polyurethane  
**Reinforcement:** Rigid PVC wire helix  
**External layer:** PVC  
**Working temp.:** From -20°C up to +60°C

Robust, flexible, smooth bore hose designed to transfer abrasive materials such as: grain, cement, granules, etc. The hose has an antistatic wire.

code	I.D. [mm]	working pressure 20°C [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
FT-MULTIFLEX-PUAS-051	51	6	0.9	220	1.14	50
FT-MULTIFLEX-PUAS-076	76	5	0.9	300	1.80	50
FT-MULTIFLEX-PUAS-102	102	5	0.9	400	2.85	30
FT-MULTIFLEX-PUAS-127	127	5	0.9	600	4.13	30
FT-MULTIFLEX-PUAS-152	152	4	0.9	800	5.40	20

## INDUSTRIAL HOSES - material handling



### DON/BN SPECIAL®

**Internal layer:** White NR/SBR rubber

**Reinforcement:** Textile braid

**External layer:** Black EPDM rubber

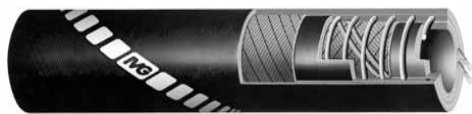
**Working temp.:** From -30°C up to +70°C

Robust, delivery hose designed to transfer foodstuffs with the high coefficient of friction such as: sugar, grain, powders, granulated materials. Complies with FDA standards. The hose features copper wires to ensure electrical conductivity. Electrically conductive external layer. Resistant to abrasion according to ISO 4649: 180 mm<sup>3</sup>.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	standard length [m]
IV-DON-BNS-038	38	56	8	24	60
IV-DON-BNS-051	51	69	8	24	60
IV-DON-BNS-075	75	95	8	24	60
IV-DON-BNS-080	80	102	8	24	60
IV-DON-BNS-090	90	112	8	24	60
IV-DON-BNS-102	102	125	8	24	60
IV-DON-BNS-110	110	130	8	18	60



## INDUSTRIAL HOSES - material handling



### VOLGA / BN SPECIAL®

**Internal layer:** White NR/SBR compound  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Black EPDM rubber  
**Working temp.:** From -40°C up to +70°C

Robust, suction-delivery hose designed to transfer foodstuffs with the high coefficient of friction such as: sugar, grain, powders, granulated materials. The hose features copper wires to ensure electrical conductivity. Resistant to abrasion according to ISO 4649: 180 mm<sup>3</sup>. Vacuum up to 0.9 bar.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-VOLGA-BNS-038	38	56	8	24	209	1.96	120
IV-VOLGA-BNS-051	51	69	8	24	280	2.50	120
IV-VOLGA-BNS-065	65	79.5	8	24	358	2.63	120
IV-VOLGA-BNS-075	75	95	8	24	413	4.24	120
IV-VOLGA-BNS-080	80	102	8	24	440	4.95	120
IV-VOLGA-BNS-090	90	114.5	8	24	485	6.02	120
IV-VOLGA-BNS-102	102	126	8	24	561	6.79	120
IV-VOLGA-BNS-110	110	130	6	18	605	6.22	120



### VOLGA SUPER®

**Internal layer:** Black, antistatic  
SBR/NR compound  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Black EPDM rubber  
**Working temp.:** From -30°C up to +70°C

Hose designed to transfer cement, sand, gravel, animal feed, seeds and other highly abrasive materials. The hose features copper wires to ensure electrical conductivity. Resistant to abrasion, ozone and weather conditions. Resistant to abrasion according to ISO 4649: 50 mm<sup>3</sup>.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	vacuum [bar]	weight [kg/m]	standard length [m]
IV-VOLGAS-051	51	69	6	18	0.9	2.20	60
IV-VOLGAS-060	60	76	6	18	0.9	2.62	60
IV-VOLGAS-070	70	86	6	18	0.9	2.98	60
IV-VOLGAS-076	76	95	6	18	0.9	3.29	60
IV-VOLGAS-080	80	99	6	18	0.9	3.44	60
IV-VOLGAS-085	85	105	6	18	0.9	3.85	60
IV-VOLGAS-090	90	110	6	18	0.9	4.14	60
IV-VOLGAS-102	102	124	6	18	0.9	5.42	60
IV-VOLGAS-110	110	134	6	18	0.9	6.87	60
IV-VOLGAS-125	125	151	6	18	0.9	7.43	60
IV-VOLGAS-152	152	178.5	6	18	0.8	11.36	60
IV-VOLGAS-203	203	232	6	18	0.8	15.78	60
IV-VOLGAS-254	254	290	6	18	0.8	23.43	60

# INDUSTRIAL HOSES - material handling

## VOLGA FRA® system - for easy hose connection

A system designed for fast, easy and economic connection and disconnection of VOLGA FRA® hoses.

Advantages of the system:

- assembly of any number of hoses of different length,
- easy assembly and disassembly,
- reusable connecting parts,
- fast replacement of used or damaged parts,
- leak-tightness at working pressure up to 10 bar and full vacuum.

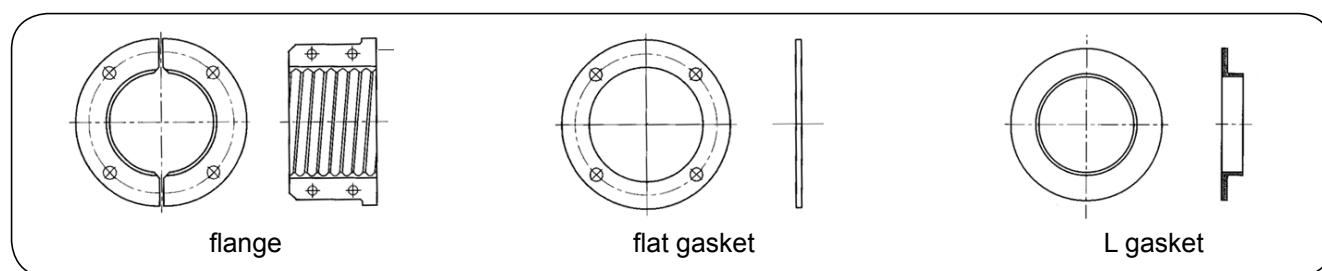


### VOLGA FRA - ABR®

**Internal layer:** Black, antistatic NR/SBR rubber compound  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Black, corrugated, synthetic rubber  
**Working temp.:** From -40°C up to +70°C

Hose designed to transfer cement, sand, gravel, animal feed, seeds and other hard, highly abrasive materials. There are two more hose options also available: FOOD - for food products and CHEM - for chemicals. The hose features copper wires to ensure electrical conductivity. Resistant to ozone, weather conditions and abrasion, according to ISO 4649: 70 mm<sup>3</sup>.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-VOLGA-ABR-051	51	83	10	30	3.75	60
IV-VOLGA-ABR-065	65	96	10	30	4.50	60
IV-VOLGA-ABR-080	80	112	10	30	5.81	60
IV-VOLGA-ABR-100	100	132	10	30	6.85	60
IV-VOLGA-ABR-125	125	157	10	30	8.26	60
IV-VOLGA-ABR-150	150	182	10	30	11.50	60
IV-VOLGA-ABR-200	200	233	10	30	15.12	60
IV-VOLGA-ABR-250	250	287	10	30	20.46	12
IV-VOLGA-ABR-300	300	340.5	10	30	26.50	12



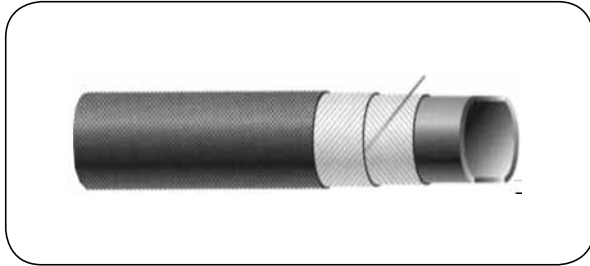
hose I.D. [mm]	flange PN10 - DIN 2576	flat gasket*	L gasket **
51	IV-VOLGA-ABR-KO-051	IV-VOLGA-ABR-UP-051-NR	IV-VOLGA-ABR-UL-051-SR
65	IV-VOLGA-ABR-KO-065	IV-VOLGA-ABR-UP-065-NR	IV-VOLGA-ABR-UL-065-SR
80	IV-VOLGA-ABR-KO-080	IV-VOLGA-ABR-UP-080-NR	IV-VOLGA-ABR-UL-080-SR
100	IV-VOLGA-ABR-KO-100	IV-VOLGA-ABR-UP-100-NR	IV-VOLGA-ABR-UL-100-SR
125	IV-VOLGA-ABR-KO-125	IV-VOLGA-ABR-UP-125-NR	IV-VOLGA-ABR-UL-125-SR
150	IV-VOLGA-ABR-KO-150	IV-VOLGA-ABR-UP-150-NR	IV-VOLGA-ABR-UL-150-SR
200	IV-VOLGA-ABR-KO-200	IV-VOLGA-ABR-UP-200-NR	IV-VOLGA-ABR-UL-200-SR
250	IV-VOLGA-ABR-KO-250	IV-VOLGA-ABR-UP-250-NR	IV-VOLGA-ABR-UL-250-SR
300	IV-VOLGA-ABR-KO-300	IV-VOLGA-ABR-UP-300-NR	IV-VOLGA-ABR-UL-300-SR

\* gasket for dry and loose products

\*\* gasket for liquid products



## INDUSTRIAL HOSES - material handling



### SOSH

**Internal layer:** Black SBR/NBR/BR rubber compound  
**Reinforcement:** Double textile braid  
**External layer:** Black SBR rubber  
**Working temp.:** From -35°C up to +80°C

Flexible, delivery hose designed to transfer concrete, cement, sand, gravel, animal feed, seeds, etc. Widely used for filling and discharging of silos, storage bins, tank trucks. Both internal and external layers are antistatic. The hose features copper wires to ensure electrical conductivity. Safety factor 3.15:1.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SP-SOSH-075X093	75	93	9	6	550	2.70	40
SP-SOSH-075X097	75	97	11	6	550	3.50	40
SP-SOSH-090X110	90	110	10	6	650	3.70	40
SP-SOSH-100X122	100	122	11	6	750	4.55	40
SP-SOSH-110X132	110	132	11	6	850	4.70	40
SP-SOSH-125X149	125	149	12	6	950	6.25	40
SP-SOSH-150X174	150	174	12	6	1200	7.15	40



### SMSP

**Internal layer:** Black SBR/NBR/BR rubber compound  
**Reinforcement:** Double textile braid, steel wire helix  
**External layer:** Black SBR rubber  
**Working temp.:** From -35°C up to +80°C

Flexible, suction-delivery hose designed to transfer concrete, cement, sand, gravel, animal feed, seeds, etc. Widely used for filling and discharging of silos, storage bins, tank trucks. Both internal and external layers are antistatic. The hose features copper wires to ensure electrical conductivity. Safety factor 3.15:1.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SP-SMSP-050X065	50	65	7.5	6	300	1.85	40
SP-SMSP-075X090	75	90	7.5	6	450	2.65	40
SP-SMSP-100X116	100	116	8	6	600	3.95	40
SP-SMSP-110X126	110	126	8	6	650	4.35	40
SP-SMSP-125X143	125	143	9	6	750	5.80	40
SP-SMSP-127X145	127	145	9	6	750	5.90	40
SP-SMSP-150X168	150	168	9	6	950	7.75	40
SP-SMSP-203X223	203	223	10	6	1500	10.75	15.5

## INDUSTRIAL HOSES - material handling



### DRAGASTEEL®

**Internal layer:** Black, antistatic SBR/NR rubber compound

**Reinforcement:** Steel wire braids

**External layer:** Black CR rubber

**Working temp.:** From -40°C up to +70°C

Delivery hose developed to transfer sand, gravel mixed with water in deepening or dredging of the seabed. The construction of the hose (layers of steel wire braid separated by layers of rubber) ensures high flexibility therefore it can be used to transport dredging spoil from a dredger to some different location where it is disposed. The external layer is resistant to sea water, oil, abrasion and weather conditions. Supplied as a complete hose assembly with built-in (vulcanized), rubber protected flanges. Versions with different diameters or higher working pressure available on request.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-DRAGASTEEL-200	200	246	15	45	21	12
IV-DRAGASTEEL-250	254	310	15	45	32	12
IV-DRAGASTEEL-300	300	354	15	45	35	12
IV-DRAGASTEEL-350	350	401	15	45	42	12
IV-DRAGASTEEL-400	400	446	15	45	43	12
IV-DRAGASTEEL-500	500	551	15	45	77	12



### ALBERT®

**Internal layer:** Black, antistatic SBR/NR rubber compound

**Reinforcement:** Synthetic braid, steel wire helix

**External layer:** Black, corrugated SBR rubber

**Working temp.:** From -40°C up to +70°C

Suction-delivery hose developed to transfer sand, gravel mixed with water in deepening or dredging of the seabed. Widely used for the suction of dredging spoil (pulp) from the bed of a water area. The external layer is resistant to sea water, oil, abrasion and weather conditions. Supplied as a complete hose assembly with built-in (vulcanized), rubber protected flanges or enlarged ends. Other diameters available on request.

code	I.D. [mm]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-ALBERT-200	200	0.9	2200	19	12
IV-ALBERT-250	254	0.9	2500	27	12
IV-ALBERT-300	300	0.9	3000	38	12
IV-ALBERT-350	350	0.9	4300	50	12
IV-ALBERT-450	450	0.9	5300	63	12

# INDUSTRIAL HOSES - ducting and ventilation

## Hoses description

Ducting hoses are very lightweight and flexible, designed to transfer gases, chemical fumes, dust, sawdust, dry and loose or highly abrasive products. Applications where ducting hoses are used usually demand suction (vacuum). However some applications demand pressure transfer e.g. to blow air. Ducting hoses available at TUBES INTERNATIONAL® can be divided into four groups:

### Resistant to abrasion

Lightweight, flexible hoses made of PU, reinforced with steel wire helix, designed to extract and transfer dry and loose materials, dust and sawdust. The abrasive properties of a transferred medium determine the wall thickness of hose that is to be selected from our offer.

Available as an antistatic (AS) or food quality version. Widely used in woodworking, metalworking, plastics, food and many other fields of industry.

### Resistant to high temperature

Highly flexible and lightweight hoses designed to remove fumes, air, exhaust and gases at extremely high temperature. Made of Kevlar fabric or silicone-coated fibreglass fabric and reinforced with steel wire helix.

Widely used in metallurgical, automotive, aircraft and shipbuilding industry.

### Resistant to chemical substances

Lightweight, flexible hoses designed to remove aggressive fumes of chemical substances, solvents and gases. Made of such materials as: polyethylene or PTFE-coated fabric. Reinforced with steel wire helix. The majority of hoses is available as an antistatic or electrically conductive version. Indispensable in chemical and petrochemical industry.

### Special applications

Special hoses for such applications as e.g. blowing of hot and cold air into buildings and tents, removal of welding fumes, hoses for industrial vacuum cleaners or road-sweeping machines.

### Assembly of ducting hoses

Ducting hoses offered by TUBES INTERNATIONAL® can be easily assembled using a system of connectors for ducting hoses and appropriate clamps (see: HOSE CONNECTORS). It is recommended to assemble ducting hoses with BC type (right hand) worm drive bridge hose clamp, except for Clip-type hoses (KEVLAR SI CL, SILICONE CL, PTFE CL, GRIPFLEX) that require (left hand) bridge clamps.

Example: assembly with BC type worm drive bridge hose clamps



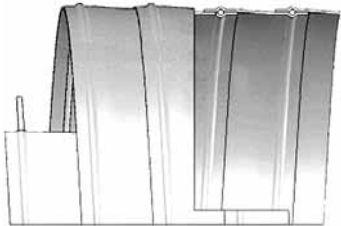
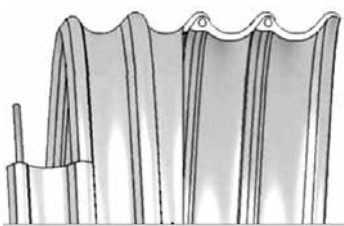
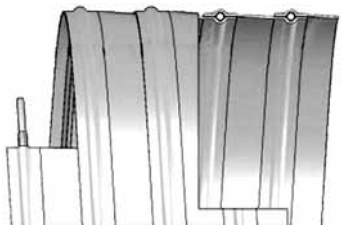
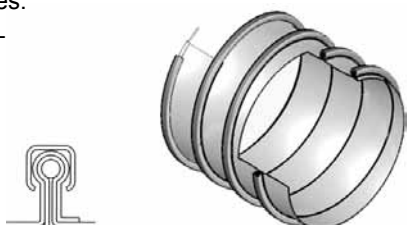
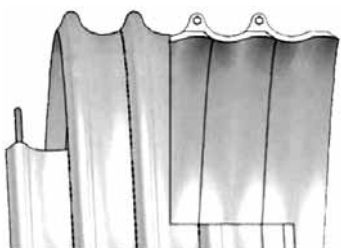
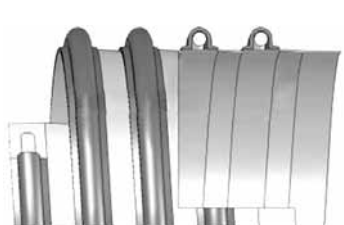
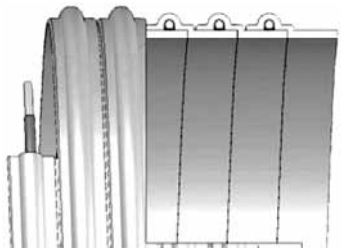

SC-P2SP-080 ducting hose assembled with 90° elbow, code: KS-KSBB90-080-OC using BC type worm drive bridge hose clamp, diameter range: 70 ÷ 90 mm, code: CL-OMP-090-097.

# INDUSTRIAL HOSES - ducting and ventilation

## Construction of ducting hoses:

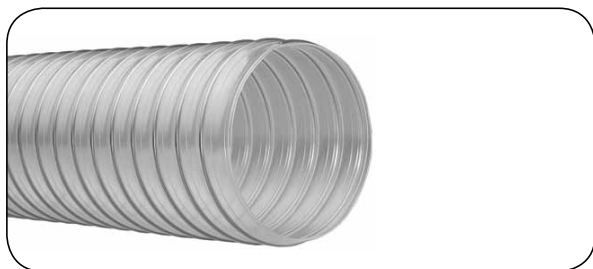
Ducting hoses are made of a layer of thermoplastic material (e.g. polyurethane) or fabric (e.g. polyester) coated with polymeric material (e.g. silicone). A helix made of steel wire, steel strip or plastic ensures resistance to vacuum. The resistance to vacuum is determined by the diameter of a wire (steel strip), whereas the resistance to abrasion by the type and thickness of the material of a hose wall.

The most common hose construction:

<p>P 2 PU P 2 PE P 2 SP P 2 HL P 2 A1000 P 1 N PU SE-A P 1 L PU SE-A P 2 PP</p>  <p>overlapping hose material, steel wire helix</p>	<p>P 7 N PU P 7 M PU AE</p>  <p>externally overlapping hose material, steel wire helix embedded in hose material</p>
<p>P 1 N PU</p>  <p>overlapping hose material, PVC-coated steel wire helix</p>	<p>CLIP type hoses: KEVLAR SI CL SILICON CL PTFE CL GRIPFLEX</p>  <p>hose material overlapping under U-shape steel wear strip profile (clip), with steel wire inside the profile</p>
<p>P 7 L PU P 1 V PU SE-A P 1 S PU SE-A</p>  <p>internally overlapping hose material, steel wire helix embedded in hose material</p>	<p>P-G-EX 1</p>  <p>internally overlapping hose material, polyamide helix protected by fabric wear strip</p>
<p>P 3 PU P 3 S PU</p>  <p>overlapping hose material, steel wire helix (P 3 PU: PVC-coated helix wire)</p>	<p>PLS</p>  <p>hose material - fabric tube, external steel wire helix protected by wear strip</p>

# INDUSTRIAL HOSES - ducting and ventilation

## Abrasion resistant hoses



### P 2 PU

**Material:** Transparent polyester-polyurethane (standard and AS version)  
Transparent polyether-polyurethane (AE and PAS version)

**Wall thickness:** 0.4 mm

**Reinforcement:** Steel wire helix

**Working temp.:** From -40°C up to +100°C

Lightweight, highly flexible hose designed to transport fumes of oils, dust, sawdust, loose and dry materials, etc. Widely used in construction, woodworking and food industry. Other diameters available in the range of 20 ÷ 800 mm. AE version - resistant to hydrolysis and microbes, compliant with FDA regulations and EU Directives. AS version - antistatic ( $R < 10^8 \Omega$ ) - TRBS 2153. PAS version - resistant to hydrolysis and microbes, compliant with FDA 21 CFR 177.2600, antistatic ( $R < 10^9 \Omega$ ) according to TRBS 2153, with stainless steel wire helix.

code	I.D. [mm]	wire [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-P2PU-025	25	1.2	0.65	0.3	18	0.13	10
SC-P2PU-030	30	1.2	0.6	0.3	21	0.17	10
SC-P2PU-040	40	1.2	0.5	0.25	28	0.23	10
SC-P2PU-050	50	1.2	0.4	0.2	35	0.30	10
SC-P2PU-060	60	1.2	0.4	0.16	42	0.34	10
SC-P2PU-065	65	1.2	0.35	0.14	46	0.37	10
SC-P2PU-070	70	1.2	0.35	0.14	49	0.40	10
SC-P2PU-075	75	1.2	0.3	0.1	53	0.43	10
SC-P2PU-080	80	1.2	0.28	0.1	56	0.46	10
SC-P2PU-085	85	1.2	0.26	0.09	60	0.47	10
SC-P2PU-090	90	1.2	0.24	0.09	62	0.49	10
SC-P2PU-100	100	1.6	0.2	0.09	70	0.51	10
SC-P2PU-110	110	1.6	0.2	0.08	77	0.55	10
SC-P2PU-120	120	1.6	0.2	0.08	85	0.60	10
SC-P2PU-125	125	1.6	0.2	0.08	88	0.65	10
SC-P2PU-130	130	1.6	0.18	0.08	92	0.69	10
SC-P2PU-140	140	1.6	0.15	0.06	95	0.71	10
SC-P2PU-150	150	1.6	0.1	0.06	105	0.78	10
SC-P2PU-160	160	1.6	0.1	0.06	112	0.81	10
SC-P2PU-170	170	1.6	0.09	0.05	117	0.88	10
SC-P2PU-175	175	1.6	0.09	0.05	123	0.90	10
SC-P2PU-180	180	1.6	0.08	0.05	131	0.98	10
SC-P2PU-190	190	1.6	0.08	0.05	134	1.02	10
SC-P2PU-200	200	2	0.08	0.05	140	1.05	10
SC-P2PU-225	225	2	0.05	0.04	158	1.09	10
SC-P2PU-220	220	2	0.05	0.04	161	1.12	10
SC-P2PU-250	250	2	0.05	0.04	175	1.25	10
SC-P2PU-275	275	2	0.03	0.04	190	1.40	10
SC-P2PU-300	300	2	0.03	0.03	210	1.55	10
SC-P2PU-305	305	2	0.03	0.03	229	1.57	10
SC-P2PU-320	320	2	0.03	0.03	236	1.69	10
SC-P2PU-350	350	2	0.02	0.02	245	1.80	10
SC-P2PU-400	400	2	0.02	0.02	280	2.10	10
SC-P2PU-450	450	2	0.01	0.01	315	2.35	10
SC-P2PU-500	500	2	0.01	0.01	350	2.62	10

Code example for AE version: SC-P2PUAE-025  
AS version: SC-P2PUAS-025  
PAS version: SC-P2PUPAS-025

# INDUSTRIAL HOSES - ducting and ventilation

## Abrasion resistant hoses



### P 1 L PU AE SE-A

**Material:** Transparent polyether-polyurethane

**Wall thickness:** 0.4 mm

**Reinforcement:** Steel wire helix

**Working temp.:** From -40°C up to +100°C

Lightweight, highly flexible hose designed to remove light, loose materials. Widely used in woodworking and furniture industry. Resistant to hydrolysis and microbes. Highly resistant to abrasion and mineral oils. Flame retardant, compliant with DIN 4102 B1. Electrically conductive according to BGI 739 after grounding the wire. Remains flexible in low temperatures. The hose is marked with an arrow indicating the correct direction of flow. Other diameters available in the range of 20 ÷ 800 mm.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-P1LPUAESEA-025	25	0.6	0.3	16	0.13	10
SC-P1LPUAESEA-030	30	0.55	0.25	20	0.15	10
SC-P1LPUAESEA-040	40	0.5	0.25	28	0.23	10
SC-P1LPUAESEA-050	50	0.4	0.2	35	0.29	10
SC-P1LPUAESEA-060	60	0.4	0.16	42	0.34	10
SC-P1LPUAESEA-080	80	0.27	0.1	56	0.46	10
SC-P1LPUAESEA-100	100	0.2	0.09	70	0.52	10
SC-P1LPUAESEA-120	120	0.2	0.08	88	0.61	10
SC-P1LPUAESEA-140	140	0.15	0.08	92	0.66	10
SC-P1LPUAESEA-150	150	0.1	0.07	105	0.78	10
SC-P1LPUAESEA-160	160	0.09	0.06	114	0.85	10
SC-P1LPUAESEA-180	180	0.09	0.06	128	0.95	10
SC-P1LPUAESEA-200	200	0.08	0.05	140	1.02	10
SC-P1LPUAESEA-215	215	0.07	0.05	185	1.14	10
SC-P1LPUAESEA-225	225	0.06	0.04	200	1.20	10
SC-P1LPUAESEA-250	250	0.05	0.04	205	1.28	10
SC-P1LPUAESEA-300	300	0.03	0.03	210	1.54	10
SC-P1LPUAESEA-400	400	0.01	0.01	280	2.05	10
SC-P1LPUAESEA-500	500	0.01	0.01	350	2.56	10
SC-P1LPUAESEA-600	600	0.01	0.01	400	4.60	10

# INDUSTRIAL HOSES - ducting and ventilation

## Abrasion resistant hoses



### P 1 N PU

**Material:** Transparent polyester-polyurethane (standard and AS version)  
Polyether- polyurethane (AE and EL version)

**Wall thickness:** 0.5 mm (0.6 mm from Ø 100 mm)

**Reinforcement:** PVC-coated steel wire helix

**Working temp.:** From -40°C up to +100°C

Lightweight, flexible hose designed to remove and transfer light granules in food (AE version), paper making and textile industry. High abrasion resistance. Other diameters available in the range of 10 ÷ 408 mm.

AE version - resistant to hydrolysis and microbes, compliant with FDA regulations, EU Directives

AS version - antistatic ( $R < 10^8 \Omega$ ) - TRBS 2153.

EL version - electrically conductive ( $R < 10^4 \Omega$ ) according to TRBS 2153 and ATEX 94/9/EC Directive, resistant to hydrolysis and microbes. Colour: black.

code	I.D. [mm]	wire [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-P1NPU-013	13	0.8	2	0.5	13	0.07	10
SC-P1NPU-020	20	1	1.8	0.45	20	0.11	10
SC-P1NPU-025	25	1	1.65	0.4	25	0.16	10
SC-P1NPU-030	30	1	1.5	0.35	30	0.18	10
SC-P1NPU-040	40	1	1.4	0.3	40	0.22	10
SC-P1NPU-045	45	1	1.3	0.28	45	0.25	10
SC-P1NPU-050	50	1	1.3	0.28	50	0.27	10
SC-P1NPU-060	60	1.5	1.1	0.25	60	0.47	10
SC-P1NPU-070	70	1.5	0.9	0.22	70	0.53	10
SC-P1NPU-075	75	1.5	0.8	0.2	75	0.59	10
SC-P1NPU-080	80	1.5	0.7	0.18	80	0.65	10
SC-P1NPU-090	90	1.5	0.6	0.15	90	0.72	10
SC-P1NPU-100	100	1.8	0.6	0.15	100	0.79	10
SC-P1NPU-110	110	1.8	0.6	0.15	110	0.79	10
SC-P1NPU-120	120	1.8	0.5	0.15	120	0.85	10
SC-P1NPU-125	125	1.8	0.4	0.12	125	0.98	10
SC-P1NPU-130	130	1.8	0.3	0.12	130	1.02	10
SC-P1NPU-140	140	1.8	0.3	0.12	140	1.05	10
SC-P1NPU-150	150	1.8	0.25	0.1	150	1.18	10
SC-P1NPU-160	160	2	0.25	0.1	160	1.32	10
SC-P1NPU-170	170	2	0.25	0.1	170	1.40	10
SC-P1NPU-175	175	2	0.25	0.1	175	1.45	10
SC-P1NPU-180	180	2	0.2	0.09	180	1.50	10
SC-P1NPU-200	200	2	0.2	0.09	200	1.67	10
SC-P1NPU-225	225	2	0.2	0.09	225	1.88	10
SC-P1NPU-250	250	2.2	0.15	0.06	250	2.05	10
SC-P1NPU-275	275	2.2	0.15	0.06	275	2.24	10
SC-P1NPU-300	300	2.2	0.12	0.06	300	2.45	10
SC-P1NPU-325	325	2.2	0.12	0.05	325	2.65	10
SC-P1NPU-350	350	2.2	0.1	0.04	350	2.85	10
SC-P1NPU-375	375	2.2	0.08	0.03	375	3.05	10
SC-P1NPU-400	400	2.2	0.08	0.02	400	3.25	10

Code example for AE version: SC-P1NPUAE-013

AS version: SC-P1NPUAS-013

EL version: SC-P1NPUEL-013

# INDUSTRIAL HOSES - ducting and ventilation

## Abrasion resistant hoses



### P 1 N PU AE SE-A

**Material:** Transparent polyether-polyurethane

**Wall thickness:** 0.5 mm (0.6 mm from Ø 60 mm)

**Reinforcement:** Steel wire helix

**Working temp.:** From -40°C up to +100°C

Lightweight, flexible hose designed for suction of dust and tiny particles. Widely used in woodworking and furniture industry. Excellent abrasion resistance. Resistant to hydrolysis and microbes. Flame retardant, compliant with DIN 4102 B1. Electrically conductive according to BGI 739 by grounding the wire. The hose is marked with an arrow indicating the correct direction of flow. Other diameters available in the range of 20 ÷ 408 mm.

code	I.D. [mm]	wire [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-P1NPUAESEA-020	20	1	1.9	0.55	20	0.14	10
SC-P1NPUAESEA-025	25	1	1.7	0.45	25	0.17	10
SC-P1NPUAESEA-030	30	1	1.65	0.45	30	0.19	10
SC-P1NPUAESEA-032	32	1	1.6	0.42	32	0.20	10
SC-P1NPUAESEA-035	35	1	1.5	0.35	35	0.21	10
SC-P1NPUAESEA-038	38	1	1.5	0.3	38	0.23	10
SC-P1NPUAESEA-040	40	1	1.4	0.3	40	0.25	10
SC-P1NPUAESEA-050	50	1	1.3	0.28	50	0.31	10
SC-P1NPUAESEA-060	60	1.5	1.1	0.25	60	0.52	10
SC-P1NPUAESEA-070	70	1.5	0.9	0.22	70	0.60	10
SC-P1NPUAESEA-075	75	1.5	0.8	0.2	75	0.65	10
SC-P1NPUAESEA-080	80	1.5	0.8	0.2	80	0.68	10
SC-P1NPUAESEA-090	90	1.5	0.7	0.16	90	0.73	10
SC-P1NPUAESEA-100	100	1.8	0.6	0.15	100	0.83	10
SC-P1NPUAESEA-102	102	1.8	0.6	0.15	102	0.86	10
SC-P1NPUAESEA-110	110	1.8	0.5	0.14	110	0.92	10
SC-P1NPUAESEA-120	120	1.8	0.45	0.14	120	0.95	10
SC-P1NPUAESEA-125	125	1.8	0.4	0.12	125	1.03	10
SC-P1NPUAESEA-127	127	1.8	0.4	0.12	127	1.07	10
SC-P1NPUAESEA-130	130	1.8	0.3	0.12	130	1.10	10
SC-P1NPUAESEA-140	140	1.8	0.3	0.12	140	1.12	10
SC-P1NPUAESEA-150	150	1.8	0.25	0.1	150	1.24	10
SC-P1NPUAESEA-152	152	1.8	0.25	0.1	152	1.28	10
SC-P1NPUAESEA-160	160	2	0.22	0.1	160	1.35	10
SC-P1NPUAESEA-170	170	2	0.22	0.1	170	1.40	10
SC-P1NPUAESEA-175	175	2	0.22	0.1	175	1.46	10
SC-P1NPUAESEA-180	180	2	0.22	0.1	180	1.51	10
SC-P1NPUAESEA-200	200	2	0.2	0.09	200	1.68	10
SC-P1NPUAESEA-215	215	2	0.2	0.09	200	1.81	10
SC-P1NPUAESEA-225	225	2	0.15	0.09	225	1.90	10
SC-P1NPUAESEA-250	250	2.2	0.15	0.08	250	1.97	10
SC-P1NPUAESEA-275	275	2.2	0.15	0.06	275	2.24	10
SC-P1NPUAESEA-300	300	2.2	0.12	0.06	300	2.36	10
SC-P1NPUAESEA-350	350	2.2	0.1	0.04	350	2.75	10
SC-P1NPUAESEA-400	400	2.2	0.08	0.02	400	3.14	10



# INDUSTRIAL HOSES - ducting and ventilation

## Abrasion resistant hoses



### P 7 L PU

**Material:** Transparent polyester-polyurethane (standard and AS version)  
Polyether- polyurethane (AE and PAS version)

**Wall thickness:** 0.7 mm

**Reinforcement:** Steel wire helix

**Working temp.:** From -40°C up to +100°C

Robust, smooth bore hose designed to extract and transport highly abrasive materials. Non-toxic and oil resistant. Widely used in woodworking, metalworking and plastic industry. Other diameters available in the range of 25 ÷ 500 mm.

AE version - resistant to hydrolysis and microbes, compliant with FDA regulations and EU Directives

AS version - antistatic ( $R < 10^8 \Omega$ ) - TRBS 2153.

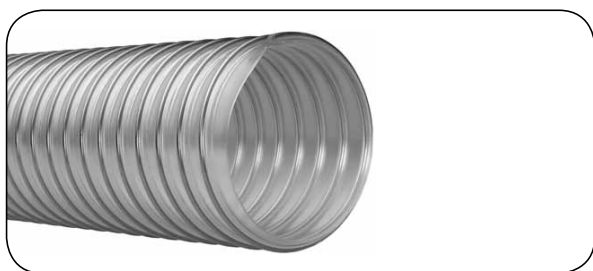
PAS version - resistant to microbes and hydrolysis, compliant with FDA 21 CFR 177.2600, antistatic ( $R < 10^9 \Omega$ ) according to TRBS 2153, with stainless steel helix.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-P7LPU-030	30	1.3	0.4	30	0.25	10
SC-P7LPU-040	40	1.15	0.3	40	0.40	10
SC-P7LPU-050	50	1	0.25	50	0.45	10
SC-P7LPU-060	60	1	0.25	60	0.48	10
SC-P7LPU-065	65	0.9	0.2	65	0.55	10
SC-P7LPU-070	70	0.8	0.2	70	0.60	10
SC-P7LPU-080	80	0.8	0.2	80	0.65	10
SC-P7LPU-090	90	0.6	0.18	90	0.74	10
SC-P7LPU-100	100	0.6	0.18	100	0.84	10
SC-P7LPU-110	110	0.5	0.15	110	0.90	10
SC-P7LPU-120	120	0.5	0.15	120	0.95	10
SC-P7LPU-125	125	0.4	0.1	125	0.98	10
SC-P7LPU-130	130	0.4	0.1	130	1.06	10
SC-P7LPU-140	140	0.40	0.1	140	1.09	10
SC-P7LPU-150	150	0.38	0.1	150	1.12	10
SC-P7LPU-160	160	0.35	0.08	160	1.20	10
SC-P7LPU-180	180	0.3	0.07	180	1.45	10
SC-P7LPU-200	200	0.25	0.05	200	1.50	10
SC-P7LPU-215	215	0.25	0.05	215	1.76	10
SC-P7LPU-220	220	0.2	0.04	220	1.80	10
SC-P7LPU-225	225	0.2	0.04	225	1.85	10
SC-P7LPU-250	250	0.2	0.04	250	1.93	10
SC-P7LPU-300	300	0.15	0.02	300	2.31	10

Code example for AE version: SC-P7LPUAE-030  
AS version: SC-P7LPUAS-030  
PAS version: SC-P7LPU PAS-030

# INDUSTRIAL HOSES - ducting and ventilation

## Abrasion resistant hoses



### P 1 V PU AE SE-A

**Material:** Transparent polyether-polyurethane

**Wall thickness:** 0.7 mm

**Reinforcement:** Steel wire helix

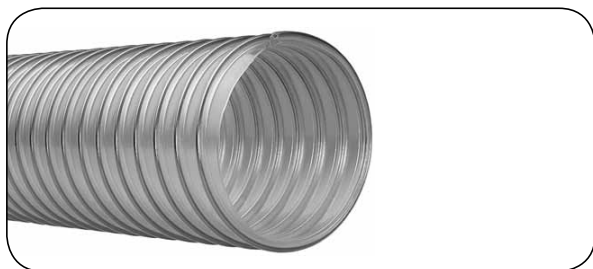
**Working temp.:** From -40°C up to +100°C

Flexible, oil resistant hose designed to extract highly abrasive materials. Widely used in woodworking and furniture industry. Resistant to hydrolysis and microbes. Flame retardant, compliant with DIN 4102 B1. Electrically conductive according to BGI 739 by grounding the wire. The hose is marked with an arrow indicating the correct direction of flow. Other diameters available in the range of 25 ÷ 500 mm.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-P1VPUAESEA-030	30	1.3	0.3	30	0.25	10
SC-P1VPUAESEA-040	40	1.15	0.4	40	0.40	10
SC-P1VPUAESEA-050	50	1	0.25	50	0.45	10
SC-P1VPUAESEA-060	60	1	0.25	60	0.48	10
SC-P1VPUAESEA-080	80	0.8	0.2	80	0.65	10
SC-P1VPUAESEA-100	100	0.6	0.18	100	0.84	10
SC-P1VPUAESEA-120	120	0.5	0.15	120	0.95	10
SC-P1VPUAESEA-140	140	0.4	0.1	140	1.06	10
SC-P1VPUAESEA-150	150	0.38	0.1	150	1.12	10
SC-P1VPUAESEA-160	160	0.35	0.08	160	1.20	10
SC-P1VPUAESEA-180	180	0.3	0.07	180	1.45	10
SC-P1VPUAESEA-200	200	0.25	0.05	200	1.50	10
SC-P1VPUAESEA-215	215	0.25	0.05	215	1.76	10
SC-P1VPUAESEA-225	225	0.2	0.04	225	1.85	10
SC-P1VPUAESEA-250	250	0.2	0.04	250	1.93	10
SC-P1VPUAESEA-300	300	0.15	0.02	300	2.31	10
SC-P1VPUAESEA-350	350	0.13	0.01	350	2.50	10
SC-P1VPUAESEA-400	400	0.1	0.01	400	2.85	10

# INDUSTRIAL HOSES - ducting and ventilation

## Abrasion resistant hoses



### P 1 S P U A E S E - A

**Material:** Transparent polyether-polyurethane

**Wall thickness:** 0.9 mm

**Reinforcement:** Steel wire helix

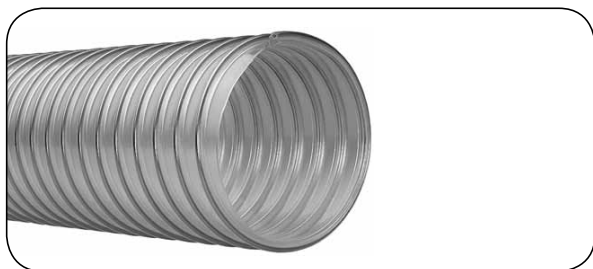
**Working temp.:** From -40°C up to +100°C

Flexible, oil resistant hose designed to extract highly abrasive materials. Widely used in woodworking and furniture industry. Resistant to hydrolysis and microbes. Flame retardant, compliant with DIN 4102 B1. Electrically conductive according to BGI 739 by grounding the wire. The hose is marked with an arrow indicating the correct direction of flow. Other diameters available in the range of 25 ÷ 500 mm.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-P1SPUAESEA-040	40	1.2	0.4	46	0.42	10
SC-P1SPUAESEA-050	50	1.15	0.25	55	0.48	10
SC-P1SPUAESEA-060	60	1.1	0.25	65	0.54	10
SC-P1SPUAESEA-080	80	1	0.2	85	0.72	10
SC-P1SPUAESEA-100	100	0.65	0.18	106	1.02	10
SC-P1SPUAESEA-120	120	0.6	0.15	126	1.15	10
SC-P1SPUAESEA-140	140	0.5	0.1	146	1.25	10
SC-P1SPUAESEA-150	150	0.4	0.1	158	1.32	10
SC-P1SPUAESEA-160	160	0.35	0.08	168	1.41	10
SC-P1SPUAESEA-180	180	0.3	0.07	188	1.75	10
SC-P1SPUAESEA-200	200	0.25	0.05	208	1.94	10
SC-P1SPUAESEA-215	215	0.25	0.05	224	2.08	10
SC-P1SPUAESEA-225	225	0.2	0.04	232	2.18	10
SC-P1SPUAESEA-250	250	0.2	0.04	260	2.42	10
SC-P1SPUAESEA-300	300	0.15	0.02	310	3.15	10
SC-P1SPUAESEA-350	350	0.13	0.01	360	3.82	10
SC-P1SPUAESEA-400	400	0.1	0.01	410	4.31	10

## INDUSTRIAL HOSES - ducting and ventilation

### Abrasion resistant hoses



#### P 2 CNC

**Material:** Transparent polyether-polyurethane

**Reinforcement:** Steel wire helix

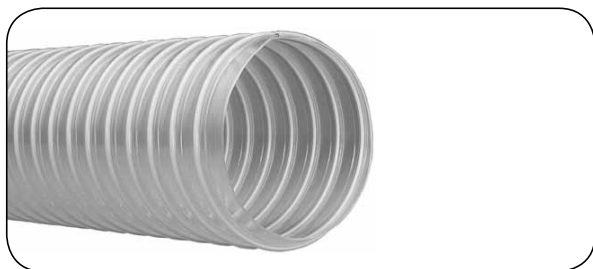
**Working temp.:** From -40°C up to +100°C

Flexible hose designed to extract oil fumes, dust, sawdust, light loose products, etc. Widely used in woodworking, construction industry, particularly recommended for CNC processing centers (woodworking). Flame retardant, compliant with DIN 4102 B1, resistant to hydrolysis and microbes. Free of halogens and plasticizers. Electrically conductive according to BGI 739-2 by grounding the wire. Other diameters available in the range of 80 ÷ 600 mm.

code	I.D. [mm]	wall thickness [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-P2CNC-080	80	0.65	0.35	0.2	80	0.65	10
SC-P2CNC-100	100	0.65	0.3	0.15	100	0.80	10
SC-P2CNC-120	120	0.65	0.3	0.12	120	0.95	10
SC-P2CNC-140	140	0.65	0.2	0.1	140	1.11	10
SC-P2CNC-160	160	0.8	0.2	0.08	160	1.79	10
SC-P2CNC-180	180	0.8	0.15	0.07	180	2.00	10
SC-P2CNC-200	200	0.8	0.15	0.05	200	2.22	10
SC-P2CNC-250	250	0.8	0.1	0.04	250	2.76	10
SC-P2CNC-300	300	0.8	0.05	0.03	300	3.30	10
SC-P2CNC-325	325	0.8	0.03	0.03	325	3.57	10
SC-P2CNC-350	350	0.8	0.02	0.02	350	3.84	10
SC-P2CNC-400	400	0.8	0.02	0.02	400	4.38	10
SC-P2CNC-450	450	0.8	0.01	0.01	450	4.92	10
SC-P2CNC-500	500	0.8	0.01	0.01	500	5.46	10
SC-P2CNC-600	600	0.8	0.01	0.01	600	6.53	10

# INDUSTRIAL HOSES - ducting and ventilation

## Abrasion resistant hoses



### P 3 PU

**Material:** Transparent polyester-polyurethane (standard and AS version)  
Polyether- polyurethane (AE and EL version)

**Reinforcement:** PVC-coated steel wire helix

**Working temp.:** From -40°C up to +100°C

Flexible hose designed to extract highly abrasive materials. Widely used in woodworking, metalworking, plastics and food industry. Other diameters available in the range of 20 ÷ 500 mm.

AE - version - resistant to hydrolysis and microbes, compliant with FDA regulations and EU Directives.

AS version - antistatic ( $R < 10^8 \Omega$ ) - TRBS 2153.

EL version - electrically conductive ( $R < 10^4 \Omega$ ) according to TRBS 2153 and ATEX 94/9/EC Directive, resistant to hydrolysis and microbes. Colour: black.

code	I.D. [mm]	wire [mm]	wall thickness [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-P3PU-020	20	1	0.8	2.3	0.7	30	0.17	10
SC-P3PU-025	25	1	0.8	2.1	0.5	38	0.21	10
SC-P3PU-030	30	1	0.8	2.1	0.5	45	0.25	10
SC-P3PU-040	40	1.5	0.9	2	0.45	60	0.35	10
SC-P3PU-045	45	1.5	0.9	1.8	0.4	68	0.39	10
SC-P3PU-050	50	1.5	0.9	1.8	0.4	75	0.44	10
SC-P3PU-055	55	1.5	0.9	1.6	0.35	83	0.49	10
SC-P3PU-060	60	1.5	0.9	1.6	0.35	90	0.53	10
SC-P3PU-065	65	1.5	0.9	1.5	0.35	98	0.58	10
SC-P3PU-070	70	1.5	0.9	1.5	0.35	105	0.61	10
SC-P3PU-080	80	1.5	0.9	1.2	0.3	120	0.67	10
SC-P3PU-090	90	1.5	0.9	1	0.3	135	0.88	10
SC-P3PU-100	100	1.8	1.1	1	0.3	150	1.02	10
SC-P3PU-110	110	1.8	1.1	0.8	0.25	165	1.12	10
SC-P3PU-120	120	1.8	1.1	0.8	0.25	180	1.22	10
SC-P3PU-125	125	1.8	1.1	0.75	0.25	185	1.28	10
SC-P3PU-130	130	1.8	1.1	0.55	0.22	195	1.32	10
SC-P3PU-140	140	1.8	1.1	0.5	0.2	210	1.38	10
SC-P3PU-150	150	1.8	1.1	0.5	0.2	225	1.46	10
SC-P3PU-160	160	1.8	1.1	0.45	0.15	240	1.56	10
SC-P3PU-170	170	1.8	1.1	0.45	0.15	255	1.64	10
SC-P3PU-175	175	1.8	1.1	0.45	0.15	260	1.70	10
SC-P3PU-180	180	1.8	1.1	0.45	0.15	260	1.80	10
SC-P3PU-200	200	1.8	1.1	0.35	0.12	300	1.94	10
SC-P3PU-220	220	3	1.3	0.25	0.1	330	2.20	10
SC-P3PU-225	225	3	1.3	0.25	0.1	338	2.32	10
SC-P3PU-250	250	3	1.3	0.25	0.1	375	3.15	10
SC-P3PU-300	300	3	1.3	0.2	0.09	450	3.78	10
SC-P3PU-325	325	3	1.3	0.15	0.09	488	4.10	10
SC-P3PU-350	350	3	1.3	0.15	0.09	525	4.41	10
SC-P3PU-400	400	3	1.3	0.1	0.08	600	5.04	10
SC-P3PU-450	450	3	1.3	0.08	0.06	675	6.71	10
SC-P3PU-500	500	3	1.3	0.05	0.04	750	7.20	10

Code example for AE version: SC-P3PUAE-020

AS version: SC-P3PUAS-020

EL version: SC-P3PUEL-020

# INDUSTRIAL HOSES - ducting and ventilation

## Abrasion resistant hoses



### P 7 M P U A E

**Material:** Transparent polyester-polyurethane (AS version)  
Transparent polyether- polyurethane (AE and SAM version)

**Wall thickness:** 1.4 mm

**Reinforcement:** Steel wire helix

**Working temp.:** From -40°C up to +100°C

Robust, flexible, smooth bore hose designed to extract and convey highly abrasive materials. Non-toxic and oil resistant. Used in the woodworking industry, metalworking and plastics industry, food industry. Resistant to microbes and hydrolysis, meets the requirements of FDA and EU directives. Other diameters available in the range of 20 ÷ 400 mm.

EL version - electrically conductive ( $R < 10^4 \Omega$ ) according to TRBS 2153 and ATEX Directive 94/9/EC, resistant to microbes and hydrolysis. Does not meet the requirements of FDA nor EU directives. Black colour.

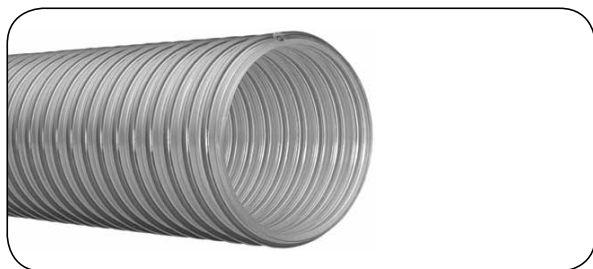
PAS version - resistant to microbes and hydrolysis, meets the requirements of FDA 21 CFR 177.2600, antistatic ( $R < 10^9 \Omega$ ) according to TRBS 2153, with stainless steel wire helix.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-P7MPUAE-032	32	3	0.9	48	0.38	10
SC-P7MPUAE-035	35	2.6	0.8	53	0.45	10
SC-P7MPUAE-038	38	2.4	0.75	57	0.52	10
SC-P7MPUAE-040	40	2.3	0.7	60	0.56	10
SC-P7MPUAE-050	50	1.9	0.6	75	0.67	10
SC-P7MPUAE-060	60	1.8	0.55	90	0.79	10
SC-P7MPUAE-075	75	1.2	0.5	113	0.98	10
SC-P7MPUAE-080	80	1.2	0.45	120	1.09	10
SC-P7MPUAE-090	90	1.1	0.45	135	1.23	10
SC-P7MPUAE-100	100	1.1	0.4	150	1.36	10
SC-P7MPUAE-110	110	1	0.35	165	1.38	10
SC-P7MPUAE-120	120	0.9	0.3	180	1.42	10
SC-P7MPUAE-125	125	0.8	0.25	188	1.54	10
SC-P7MPUAE-140	140	0.7	0.2	210	1.75	10
SC-P7MPUAE-150	150	0.7	0.2	225	1.82	10
SC-P7MPUAE-160	160	0.6	0.2	240	2.15	10
SC-P7MPUAE-180	180	0.5	0.15	270	2.55	10
SC-P7MPUAE-200	200	0.5	0.15	300	2.92	10
SC-P7MPUAE-225	225	0.4	0.1	338	3.25	10
SC-P7MPUAE-250	250	0.3	0.1	375	3.57	10
SC-P7MPUAE-300	300	0.3	0.1	450	4.31	10

Code example for EL version: SC-P7MPUEL-032  
PAS version: SC-P7MPUPAS-032

# INDUSTRIAL HOSES - ducting and ventilation

## Abrasion resistant hoses



### P 3 S PU / P 3 SV PU

**Material:** Transparent polyester-polyurethane (standard and AS version)  
Polyether- polyurethane (AE version)  
**Wall thickness:** 2 mm (P 3 SV PU - 2.5 mm)  
**Reinforcement:** Steel wire helix  
**Working temp.:** From -40°C up to +100°C

Robust, smooth bore hose designed to extract and transport highly abrasive materials. Resistant to high vacuum pressure. Non-toxic and oil resistant. Widely used in woodworking, metalworking, plastics and food industry. The hose is marked with an arrow indicating the correct direction of flow. Other diameters available in the range of 25 ÷ 350 mm.

AE version - resistant to hydrolysis and microbes, compliant with FDA regulations and EU Directives.

AS version - antistatic ( $R < 10^9 \Omega$ ) TRBS 2153.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-P3SPU-030	30	4.6	0.95	130	0.61	10
SC-P3SPU-040	40	4.2	0.95	160	0.76	10
SC-P3SPU-045	45	3.8	0.95	180	0.88	10
SC-P3SPU-050	50	3.8	0.95	200	1.00	10
SC-P3SPU-060	60	3.3	0.95	240	1.32	10
SC-P3SPU-070	70	2.7	0.95	280	1.41	10
SC-P3SPU-075	75	2.7	0.95	300	1.51	10
SC-P3SPU-080	80	2.4	0.9	320	1.61	10
SC-P3SPU-090	90	2.1	0.9	360	1.81	10
SC-P3SPU-100	100	1.9	0.9	400	2.13	10
SC-P3SPU-110	110	1.5	0.9	440	2.29	10
SC-P3SPU-120	120	1.45	0.9	480	2.48	10
SC-P3SPU-125	125	1.45	0.9	500	2.56	10
SC-P3SPU-140	100	1.25	0.85	560	3.51	10
SC-P3SPU-150	150	1.25	0.85	600	4.08	10
SC-P3SPU-160	160	1.15	0.85	640	4.48	10
SC-P3SPU-180	180	0.95	0.85	720	4.91	10
SC-P3SPU-200	200	0.95	0.85	800	5.45	10

Code example for AE version: SC-P3SPUAE-030

AS version: SC-P3SPUAS-030

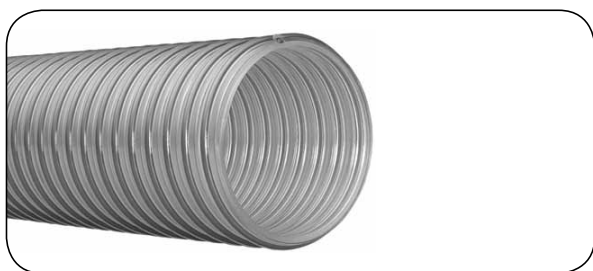
code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-P3SVPU-050	50	3.25	0.85	125	1.35	10
SC-P3SVPU-075	75	2.50	0.8	190	1.95	10
SC-P3SVPU-100	100	1.65	0.7	250	2.59	10
SC-P3SVPU-125	125	1.4	0.65	312	3.15	10
SC-P3SVPU-150	150	1.15	0.55	375	3.72	10
SC-P3SVPU-200	200	0.85	0.41	500	4.40	10
SC-P3SVPU-250	250	0.6	0.32	625	5.50	10

Code example for AE version: SC-P3SVPUAE-030

AS version: SC-P3SVPUAS-030

# INDUSTRIAL HOSES - ducting and ventilation

## Abrasion resistant hoses



### P 7 XS PU AE

**Material:** Transparent polyether-polyurethane

**Wall thickness:** 3.5 mm

**Reinforcement:** Steel wire helix

**Working temp.:** From -40°C up to +100°C

Robust, smooth bore hose designed to extract and transport highly abrasive materials i.e. sand, gravel, seeds. Resistant to high vacuum, hydrolysis, microbes and oil. Widely used in woodworking, metalworking and plastics industry. The hose is marked with an arrow indicating the correct direction of flow. Other diameters available in the range of 80 ÷ 250 mm. Standard length for diameters 80 -200 mm is 10 m, for larger diameters - on request.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]
SC-P7XSPUAE-080	80	2.58	0.99	294	2.15
SC-P7XSPUAE-090	90	2.17	0.99	324	2.39
SC-P7XSPUAE-100	100	1.94	0.99	354	2.63
SC-P7XSPUAE-110	110	1.75	0.95	384	2.87
SC-P7XSPUAE-120	120	1.59	0.95	414	3.11
SC-P7XSPUAE-130	130	1.54	0.9	444	3.35
SC-P7XSPUAE-140	140	1.42	0.9	474	3.60
SC-P7XSPUAE-150	150	1.32	0.85	504	3.84
SC-P7XSPUAE-160	160	1.29	0.85	534	4.08
SC-P7XSPUAE-170	170	1.21	0.8	564	4.32
SC-P7XSPUAE-180	180	1.14	0.75	594	4.56
SC-P7XSPUAE-190	190	1.08	0.7	624	4.80
SC-P7XSPUAE-200	200	1.02	0.65	654	5.04
SC-P7XSPUAE-210	210	0.97	0.6	684	5.28
SC-P7XSPUAE-220	220	0.92	0.55	714	5.53
SC-P7XSPUAE-230	230	0.88	0.50	744	5.77
SC-P7XSPUAE-240	240	0.84	0.45	774	6.01
SC-P7XSPUAE-250	250	0.81	0.4	804	6.25



# INDUSTRIAL HOSES - ducting and ventilation

## Abrasion resistant hoses



### SMARTFLEX 04

**Material:** Transparent polyether-polyurethane  
**Wall thickness:** 0.4 mm  
**Reinforcement:** Steel wire helix  
**Working temp.:** From -40°C up to +100°C

Lightweight, very flexible ducting hose designed for the extraction of light loose materials. Used in the woodworking and furniture industries. Highly resistant to abrasion and mineral oils. According to BGI 739-2 recommendations, the hose is electrically conductive by grounding the wire helix. The hose is marked with an arrow indicating the correct flow direction. Other diameters available in the range of 20 ÷ 800 mm.

Features:

- resistant to microbes,
- resistant to hydrolysis,
- flame retardant according to DIN 4102 B1,
- antistatic R <10<sup>8</sup> Ω.

The hose is compliant with TRGS 727 standard and ATEX Directive 94/9/EC:

- pneumatic transfer of combustible dusts and bulk loose materials (zone 20, 21, 22 indoor),
- suction of combustible dusts (zone 22 indoor),
- transfer of flammable gases, fluids and their vapours (zone 0, 1, 2 indoor),
- transfer of non-flammable gases, fluids and their vapours (zone 0, 1, 2 indoor).

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-SMARTFLEX-025-04	25	0.6	0.3	16	0.13	10
SC-SMARTFLEX-030-04	30	0.55	0.25	20	0.15	10
SC-SMARTFLEX-040-04	40	0.5	0.25	28	0.23	10
SC-SMARTFLEX-050-04	50	0.4	0.2	35	0.29	10
SC-SMARTFLEX-060-04	60	0.4	0.16	42	0.34	10
SC-SMARTFLEX-080-04	80	0.27	0.1	56	0.46	10
SC-SMARTFLEX-100-04	100	0.2	0.09	70	0.52	10
SC-SMARTFLEX-120-04	120	0.2	0.08	88	0.61	10
SC-SMARTFLEX-140-04	140	0.15	0.08	92	0.66	10
SC-SMARTFLEX-150-04	150	0.1	0.07	105	0.78	10
SC-SMARTFLEX-160-04	160	0.09	0.06	114	0.85	10
SC-SMARTFLEX-180-04	180	0.09	0.06	128	0.95	10
SC-SMARTFLEX-200-04	200	0.08	0.05	140	1.02	10
SC-SMARTFLEX-215-04	215	0.07	0.05	185	1.14	10
SC-SMARTFLEX-225-04	225	0.06	0.04	200	1.20	10
SC-SMARTFLEX-250-04	250	0.05	0.04	205	1.28	10
SC-SMARTFLEX-300-04	300	0.03	0.03	210	1.54	10
SC-SMARTFLEX-400-04	400	0.01	0.01	280	2.05	10
SC-SMARTFLEX-500-04	500	0.01	0.01	350	2.56	10
SC-SMARTFLEX-600-04	600	0.01	0.01	400	4.60	10
SC-SMARTFLEX-710-04	710	0.01	0.01	497	5.44	10
SC-SMARTFLEX-800-04	800	0.01	0.01	560	6.13	10

# INDUSTRIAL HOSES - ducting and ventilation

## Abrasion resistant hoses



### SMARTFLEX 06

**Material:** Transparent polyether-polyurethane  
**Wall thickness:** 0.6 mm (0.5 mm to Ø 60 mm)  
**Reinforcement:** Steel wire helix  
**Working temp.:** From -40°C up to +100°C

Lightweight, flexible hose designed for the extraction of dust and small particles. Used in the woodworking and furniture industries. Highly resistant to abrasion and mineral oils. According to BGI 739-2 recommendations, the hose is electrically conductive by grounding the wire helix. The hose is marked with an arrow indicating the correct flow direction. Other diameters available in the range of 20 ÷ 500 mm.

Features:

- resistant to microbes,
- resistant to hydrolysis,
- flame retardant according to DIN 4102 B1,
- antistatic R <10<sup>8</sup> Ω.

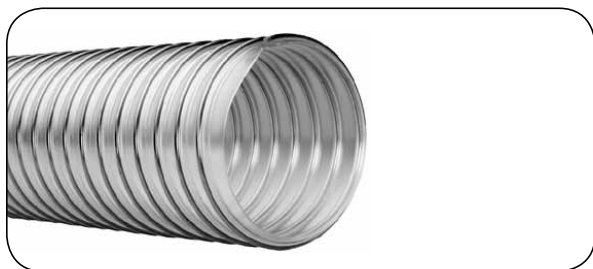
The hose is compliant with TRGS 727 standard and ATEX Directive 94/9/EC:

- pneumatic transfer of combustible dusts and bulk loose materials (zone 20, 21, 22 indoor),
- suction of combustible dusts (zone 22 indoor),
- transfer of flammable gases, fluids and their vapours (zone 0, 1, 2 indoor),
- transfer of non-flammable gases, fluids and their vapours (zone 0, 1, 2 indoor).

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-SMARTFLEX-020-06	20	1.9	0.55	20	0.14	10
SC-SMARTFLEX-025-06	25	1.7	0.45	25	0.17	10
SC-SMARTFLEX-030-06	30	1.65	0.45	30	0.19	10
SC-SMARTFLEX-035-06	35	1.5	0.35	35	0.21	10
SC-SMARTFLEX-040-06	40	1.4	0.3	40	0.25	10
SC-SMARTFLEX-050-06	50	1.3	0.28	50	0.31	10
SC-SMARTFLEX-060-06	60	1.1	0.25	60	0.52	10
SC-SMARTFLEX-070-06	70	0.9	0.22	70	0.60	10
SC-SMARTFLEX-080-06	80	0.8	0.2	80	0.68	10
SC-SMARTFLEX-100-06	100	0.6	0.15	100	0.83	10
SC-SMARTFLEX-120-06	120	0.45	0.14	120	0.95	10
SC-SMARTFLEX-125-06	125	0.4	0.12	125	1.03	10
SC-SMARTFLEX-140-06	140	0.3	0.12	140	1.12	10
SC-SMARTFLEX-150-06	150	0.25	0.1	150	1.24	10
SC-SMARTFLEX-160-06	160	0.22	0.1	160	1.35	10
SC-SMARTFLEX-175-06	175	0.22	0.1	175	1.46	10
SC-SMARTFLEX-180-06	180	0.22	0.1	180	1.51	10
SC-SMARTFLEX-200-06	200	0.2	0.09	200	1.68	10
SC-SMARTFLEX-225-06	225	0.15	0.09	225	1.90	10
SC-SMARTFLEX-250-06	250	0.15	0.08	250	1.97	10
SC-SMARTFLEX-275-06	275	0.15	0.06	275	2.24	10
SC-SMARTFLEX-300-06	300	0.12	0.06	300	2.36	10
SC-SMARTFLEX-350-06	350	0.1	0.04	350	2.75	10
SC-SMARTFLEX-400-06	400	0.08	0.02	400	3.14	10
SC-SMARTFLEX-450-06	450	0.04	0.01	450	3.55	10
SC-SMARTFLEX-500-06	500	0.02	0.01	500	3.94	10

# INDUSTRIAL HOSES - ducting and ventilation

## Abrasion resistant hoses



### SMARTFLEX 07

**Material:** Transparent polyether-polyurethane  
**Wall thickness:** 0.7 mm  
**Reinforcement:** Steel wire helix  
**Working temp.:** From -40°C up to +100°C

Flexible hose designed for the extraction of highly abrasive materials such as: wood shavings, sawdust, wood chips. Used in the woodworking and furniture industries. Highly resistant to abrasion and mineral oils. According to BGI 739-2 recommendations, the hose is electrically conductive by grounding the wire helix. The hose is marked with an arrow indicating the correct flow direction. Other diameters available in the range of 20 ÷ 500 mm.

Features:

- resistant to microbes,
- resistant to hydrolysis,
- flame retardant according to DIN 4102 B1,
- antistatic  $R < 10^8 \Omega$ .

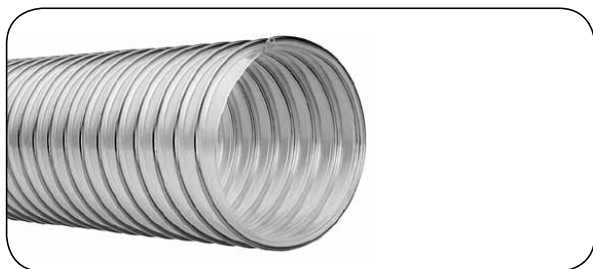
The hose is compliant with TRGS 727 standard and ATEX Directive 94/9/EC:

- pneumatic transfer of combustible dusts and bulk loose materials (zone 20, 21, 22 indoor),
- suction of combustible dusts (zone 22 indoor),
- transfer of flammable gases, fluids and their vapours (zone 0, 1, 2 indoor),
- transfer of non-flammable gases, fluids and their vapours (zone 0, 1, 2 indoor).

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-SMARTFLEX-030-07	30	1.	0.3	30	0.25	10
SC-SMARTFLEX-040-07	40	1.15	0.4	40	0.40	10
SC-SMARTFLEX-050-07	50	1	0.25	50	0.45	10
SC-SMARTFLEX-060-07	60	1	0.25	60	0.48	10
SC-SMARTFLEX-080-07	80	0.8	0.2	80	0.65	10
SC-SMARTFLEX-100-07	100	0.6	0.18	100	0.84	10
SC-SMARTFLEX-120-07	120	0.5	0.15	120	0.95	10
SC-SMARTFLEX-140-07	140	0.4	0.1	140	1.06	10
SC-SMARTFLEX-150-07	150	0.38	0.1	150	1.12	10
SC-SMARTFLEX-160-07	160	0.35	0.08	160	1.20	10
SC-SMARTFLEX-180-07	180	0.3	0.07	180	1.45	10
SC-SMARTFLEX-200-07	200	0.25	0.05	200	1.50	10
SC-SMARTFLEX-215-07	215	0.25	0.05	215	1.76	10
SC-SMARTFLEX-225-07	225	0.2	0.04	225	1.85	10
SC-SMARTFLEX-250-07	250	0.2	0.04	250	1.93	10
SC-SMARTFLEX-300-07	300	0.15	0.02	300	2.31	10
SC-SMARTFLEX-350-07	350	0.13	0.01	350	2.50	10
SC-SMARTFLEX-400-07	400	0.1	0.01	400	2.85	10

# INDUSTRIAL HOSES - ducting and ventilation

## Abrasion resistant hoses



### SMARTFLEX 10

**Material:** Transparent polyether-polyurethane

**Wall thickness:** 1 mm

**Reinforcement:** Steel wire helix

**Working temp.:** From -40°C up to +100°C

Robust, flexible, smooth bore hose designed for the extraction of highly abrasive materials such as: wood shavings, sawdust, wood chips. Used in the woodworking and furniture industries. Highly resistant to abrasion and mineral oils. According to BGI 739-2 recommendations, the hose is electrically conductive by grounding the wire helix. The hose is marked with an arrow indicating the correct flow direction. Other diameters available in the range of 25 ÷ 500 mm.

Features:

- resistant to microbes,
- resistant to hydrolysis,
- flame retardant according to DIN 4102 B1,
- antistatic  $R < 10^8 \Omega$ .

The hose is compliant with TRGS 727 standard and ATEX Directive 94/9/EC:

- pneumatic transfer of combustible dusts and bulk loose materials (zone 20, 21, 22 indoor),
- suction of combustible dusts (zone 22 indoor),
- transfer of flammable gases, fluids and their vapours (zone 0, 1, 2 indoor),
- transfer of non-flammable gases, fluids and their vapours (zone 0, 1, 2 indoor).

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-SMARTFLEX-025-10	25	1.45	0.55	16	0.19	10
SC-SMARTFLEX-030-10	30	1.45	0.55	22	0.25	10
SC-SMARTFLEX-035-10	35	1.25	0.45	33	0.30	10
SC-SMARTFLEX-040-10	40	1.25	0.45	33	0.35	10
SC-SMARTFLEX-050-10	50	1.2	0.4	42	0.41	10
SC-SMARTFLEX-060-10	60	1.15	0.3	52	0.47	10
SC-SMARTFLEX-075-10	75	1.05	0.25	67	0.61	10
SC-SMARTFLEX-080-10	80	1.05	0.25	72	0.65	10
SC-SMARTFLEX-090-10	90	0.85	0.23	86	0.80	10
SC-SMARTFLEX-100-10	100	0.7	0.23	93	0.95	10
SC-SMARTFLEX-110-10	110	0.65	0.2	107	1.02	10
SC-SMARTFLEX-120-10	120	0.65	0.2	113	1.08	10
SC-SMARTFLEX-125-10	125	0.55	0.2	117	1.13	10
SC-SMARTFLEX-140-10	140	0.55	0.15	133	1.18	10
SC-SMARTFLEX-150-10	150	0.45	0.15	145	1.25	10
SC-SMARTFLEX-160-10	160	0.4	0.15	155	1.34	10
SC-SMARTFLEX-180-10	180	0.35	0.12	175	1.68	10
SC-SMARTFLEX-200-10	200	0.3	0.1	195	1.87	10
SC-SMARTFLEX-215-10	215	0.3	0.1	211	2.01	10
SC-SMARTFLEX-225-10	225	0.25	0.09	219	2.11	10
SC-SMARTFLEX-250-10	250	0.25	0.09	247	2.35	10
SC-SMARTFLEX-300-10	300	0.2	0.07	297	3.08	10
SC-SMARTFLEX-350-10	350	0.18	0.06	347	3.75	10
SC-SMARTFLEX-400-10	400	0.15	0.06	397	4.24	10
SC-SMARTFLEX-450-10	450	0.15	0.06	448	5.42	10
SC-SMARTFLEX-500-10	500	0.15	0.06	500	6.02	10

# INDUSTRIAL HOSES - ducting and ventilation

## Abrasion resistant hoses



### SMARTFLEX 14

**Material:** Transparent polyether-polyurethane  
**Wall thickness:** 1.4 mm  
**Reinforcement:** Steel wire helix  
**Working temp.:** From -40°C up to +100°C

Highly robust, flexible, smooth bore hose designed for the extraction of highly abrasive materials such as: wood shavings, sawdust, wood chips. Used in the woodworking and furniture industries. Highly resistant to abrasion and mineral oils. According to BGI 739-2 recommendations, the hose is electrically conductive by grounding the wire helix. The hose is marked with an arrow indicating the correct flow direction. Other diameters available in the range of 25 ÷ 450 mm.

Features:

- resistant to microbes,
- resistant to hydrolysis,
- flame retardant according to DIN 4102 B1,
- antistatic  $R < 10^8 \Omega$ .

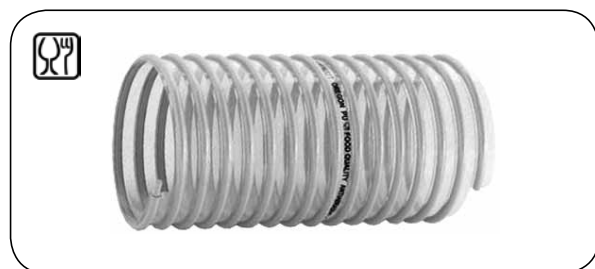
The hose is compliant with TRGS 727 standard and ATEX Directive 94/9/EC:

- pneumatic transfer of combustible dusts and bulk loose materials (zone 20, 21, 22 indoor),
- suction of combustible dusts (zone 22 indoor),
- transfer of flammable gases, fluids and their vapours (zone 0, 1, 2 indoor),
- transfer of non-flammable gases, fluids and their vapours (zone 0, 1, 2 indoor).

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-SMARTFLEX-025-14	25	3	0.9	38	0.19	10
SC-SMARTFLEX-030-14	30	3	0.9	45	0.25	10
SC-SMARTFLEX-032-14	32	3	0.9	48	0.38	10
SC-SMARTFLEX-035-14	35	2.6	0.8	53	0.45	10
SC-SMARTFLEX-038-14	38	2.4	0.75	57	0.52	10
SC-SMARTFLEX-040-14	40	2.3	0.7	60	0.56	10
SC-SMARTFLEX-050-14	50	1.9	0.6	75	0.67	10
SC-SMARTFLEX-060-14	60	1.8	0.55	90	0.79	10
SC-SMARTFLEX-075-14	75	1.2	0.5	113	0.98	10
SC-SMARTFLEX-080-14	80	1.2	0.45	120	1.09	10
SC-SMARTFLEX-090-14	90	1.1	0.45	135	1.23	10
SC-SMARTFLEX-100-14	100	1.1	0.4	150	1.36	10
SC-SMARTFLEX-120-14	120	0.9	0.3	180	1.42	10
SC-SMARTFLEX-125-14	125	0.8	0.25	188	1.54	10
SC-SMARTFLEX-140-14	140	0.7	0.2	210	1.75	10
SC-SMARTFLEX-150-14	150	0.7	0.2	225	1.82	10
SC-SMARTFLEX-160-14	160	0.6	0.	240	2.15	10
SC-SMARTFLEX-180-14	180	0.5	0.15	270	2.55	10
SC-SMARTFLEX-200-14	200	0.5	0.15	300	2.92	10
SC-SMARTFLEX-225-14	225	0.4	0.1	338	3.25	10
SC-SMARTFLEX-250-14	250	0.3	0.1	375	3.57	10
SC-SMARTFLEX-300-14	300	0.3	0.1	450	4.31	10
SC-SMARTFLEX-350-14	350	0.25	0.09	525	5.05	10
SC-SMARTFLEX-400-14	400	0.2	0.09	600	5.75	10
SC-SMARTFLEX-450-14	450	0.1	0.08	675	6.47	10

# INDUSTRIAL HOSES - ducting and ventilation

## Abrasion resistant hoses



### OREGON PU

**Material:** Transparent polyurethane

**Reinforcement:** PVC wire helix

**Working temp.:** From -25°C up to +85°C

Lightweight, flexible and smooth bore hose designed to extract dust, yarn, polluted air, powders, granules, etc. Widely used in woodworking, construction and food industry. Excellent resistance to abrasion, weather conditions and biological corrosion. Antistatic version includes copper antistatic wire ( $R = 0075 \Omega/m$ ). Meets the requirements of the European Regulation 1935/2004 CE, UE 10/2011

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight (standard) [kg/m]	weight (antistatic) [kg/m]	standard length [m]
ME-OREGON-PU-025	25	0.6	0.4	25	0.16	0.19	20
ME-OREGON-PU-030	30	0.6	0.4	30	0.19	0.21	20
ME-OREGON-PU-032	32	0.6	0.4	32	0.20	0.24	20
ME-OREGON-PU-035	35	0.4	0.4	35	0.21	0.25	20
ME-OREGON-PU-038	38	0.4	0.3	38	0.25	0.31	20
ME-OREGON-PU-040	40	0.4	0.3	40	0.28	0.33	20
ME-OREGON-PU-045	45	0.4	0.3	45	0.32	0.37	20
ME-OREGON-PU-050	50	0.4	0.3	50	0.39	0.44	20
ME-OREGON-PU-060	60	0.4	0.3	60	0.44	0.50	20
ME-OREGON-PU-063	63	0.3	0.3	63	0.47	0.53	20
ME-OREGON-PU-070	70	0.3	0.3	70	0.60	0.66	20
ME-OREGON-PU-075	75	0.3	0.3	75	0.60	0.66	20
ME-OREGON-PU-080	80	0.2	0.3	80	0.65	0.74	20
ME-OREGON-PU-090	90	0.2	0.3	90	0.75	0.81	20
ME-OREGON-PU-100	100	0.2	0.3	100	0.85	0.92	20
ME-OREGON-PU-110	110	0.2	0.3	110	1.05	1.12	20
ME-OREGON-PU-120	120	0.15	0.3	120	1.10	1.18	20
ME-OREGON-PU-125	125	0.15	0.3	125	1.17	1.25	20
ME-OREGON-PU-130	130	0.15	0.3	130	1.28	1.35	20
ME-OREGON-PU-140	140	0.1	0.3	140	1.40	1.50	20
ME-OREGON-PU-150	150	0.1	0.3	150	1.50	1.60	20
ME-OREGON-PU-160	160	0.1	0.3	160	1.70	1.78	20
ME-OREGON-PU-180	180	0.1	0.3	180	2.00	2.10	10
ME-OREGON-PU-200	200	0.1	0.3	200	2.18	2.28	10
ME-OREGON-PU-250	250	0.1	0.3	250	2.96	-	10
ME-OREGON-PU-300	300	0.1	0.3	300	3.70	-	10

Code example for AE version: ME-OREGON-PUAS-025

# INDUSTRIAL HOSES - ducting and ventilation

## High temperature resistant hoses



### CWY

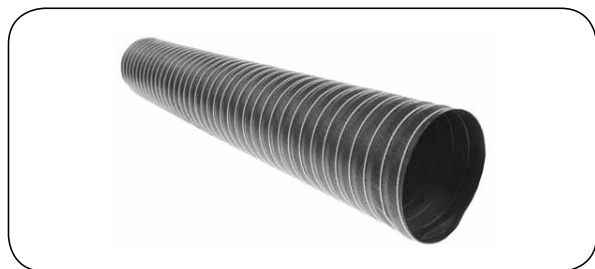
**Material:** Neoprene impregnated polyester fabric  
**Wall thickness:** 0.8 mm  
**Reinforcement:** Steel wire helix  
**Working temp.:** From -55°C up to +120°C

Flexible hose designed to remove and transfer fumes, air and gases, also in high temperature conditions. Flame retardant, resistant to chemicals and UV. Remains flexible in very low temperatures.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-CWY-025	25	1.8	0.32	38	0.20	10
SC-CWY-030	30	1.8	0.32	45	0.24	10
SC-CWY-040	40	1.5	0.3	60	0.33	10
SC-CWY-050	50	1.2	0.25	75	0.41	10
SC-CWY-060	60	1	0.2	90	0.49	10
SC-CWY-070	70	0.9	0.18	105	0.57	10
SC-CWY-075	75	0.85	0.12	113	0.61	10
SC-CWY-080	80	0.8	0.1	120	0.65	10
SC-CWY-100	100	0.6	0.08	153	0.72	10
SC-CWY-120	120	0.5	0.08	180	0.87	10
SC-CWY-125	125	0.5	0.07	190	0.90	10
SC-CWY-140	140	0.4	0.06	210	1.01	10
SC-CWY-150	150	0.3	0.06	230	1.22	10
SC-CWY-175	175	0.25	0.05	270	1.43	10
SC-CWY-200	200	0.2	0.04	305	1.63	10
SC-CWY-250	250	0.15	0.03	380	2.04	10
SC-CWY-300	300	0.1	0.02	460	3.00	10
SC-CWY-356	350	0.06	0.02	535	3.50	10
SC-CWY-406	406	0.04	0.01	610	4.00	10
SC-CWY-457	457	0.03	0.01	685	4.50	10
SC-CWY-508	508	0.03	0.01	760	4.85	10
SC-CWY-610	610	0.01	0.01	915	5.26	10

# INDUSTRIAL HOSES - ducting and ventilation

## High temperature resistant hoses



### NEOPRENE 1

**Material:** Black neoprene-coated fibreglass fabric (one layer)

**Reinforcement:** Internal steel wire helix

**Working temp.:** From -35°C up to +135°C (with peaks up to +150°C)

Lightweight, extremely flexible hose designed to remove fumes, air and gases. Widely used to transfer cool and cold air in electronic industry, plastic processing and for exhaust fumes and welding gases. For proper hose selection please contact Sales or Technical Department of TUBES INTERNATIONAL®. Standard length: 4 m.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]
TS-NEOPRENE1-013	13	15	1.5	0.53	7	0.075
TS-NEOPRENE1-019	19	21	1.5	0.53	9	0.080
TS-NEOPRENE1-022	22	24	1.5	0.53	11	0.085
TS-NEOPRENE1-025	25	27	1.4	0.53	12	0.120
TS-NEOPRENE1-032	32	34	1.4	0.5	16	0.130
TS-NEOPRENE1-038	38	40.6	1.4	0.5	19	0.165
TS-NEOPRENE1-041	41	43.6	1.3	0.45	21	0.177
TS-NEOPRENE1-044	44	46.6	1.2	0.44	22	0.199
TS-NEOPRENE1-051	51	53.6	1.2	0.44	25	0.250
TS-NEOPRENE1-055	55	57.6	1.1	0.44	27	0.270
TS-NEOPRENE1-057	57	59.6	1.1	0.4	28	0.280
TS-NEOPRENE1-060	60	62.6	1.1	0.4	30	0.300
TS-NEOPRENE1-063	63	65.6	1.1	0.4	31	0.320
TS-NEOPRENE1-065	65	67.6	1.1	0.4	33	0.340
TS-NEOPRENE1-070	70	73.1	1.1	0.35	35	0.395
TS-NEOPRENE1-076	76	79.1	1.0	0.35	38	0.410
TS-NEOPRENE1-080	80	82.1	1.0	0.3	40	0.440
TS-NEOPRENE1-083	83	86.1	1.0	0.3	41	0.470
TS-NEOPRENE1-090	90	92.1	0.9	0.29	45	0.490
TS-NEOPRENE1-095	95	98.1	0.9	0.27	47	0.540
TS-NEOPRENE1-102	102	105.1	0.9	0.26	51	0.570
TS-NEOPRENE1-108	108	111.1	0.8	0.23	54	0.680
TS-NEOPRENE1-110	110	113.1	0.8	0.21	56	0.690
TS-NEOPRENE1-114	114	117.1	0.8	0.21	57	0.730
TS-NEOPRENE1-120	120	124.1	0.8	0.19	60	0.760
TS-NEOPRENE1-127	127	130.1	0.8	0.17	63	0.805
TS-NEOPRENE1-140	140	143.1	0.8	0.15	70	0.885
TS-NEOPRENE1-152	152	155.6	0.6	0.14	76	1.050
TS-NEOPRENE1-160	160	163.9	0.6	0.12	80	1.090
TS-NEOPRENE1-165	165	168.9	0.6	0.12	85	1.100
TS-NEOPRENE1-178	178	182.1	0.6	0.1	89	1.210
TS-NEOPRENE1-180	180	184.1	0.6	0.1	95	1.240
TS-NEOPRENE1-203	203	207.1	0.5	0.07	101	1.380
TS-NEOPRENE1-230	230	233.6	0.4	0.06	114	1.490
TS-NEOPRENE1-254	254	258.6	0.4	0.05	127	1.650
TS-NEOPRENE1-305	305	309.6	0.1	0.03	152	2.000



# INDUSTRIAL HOSES - ducting and ventilation

## High temperature resistant hoses



### NEOPRENE 2

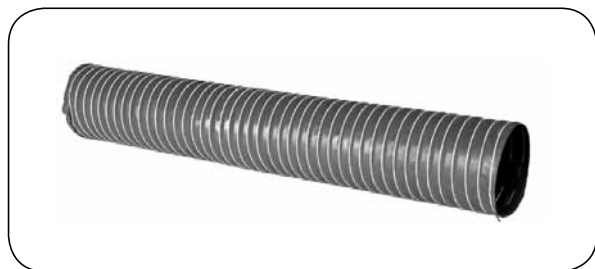
**Material:** Black Neoprene-coated fibreglass fabric (two layers)  
**Reinforcement:** Internal steel wire helix  
**Working temp.:** From -35°C up to +135°C (with peaks up to +150°C)

More robust version of NEOPRENE 1 hose. Widely used to transfer cool and cold air in electronic industry, plastics processing and for exhaust fumes and welding gases. For proper hose selection please contact Sales or Technical Department of TUBES INTERNATIONAL®. Standard length: 4 m.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]
TS-NEOPRENE2-013	13	15.6	2.6	0.7	13	0.085
TS-NEOPRENE2-019	19	21.6	2.5	0.7	19	0.105
TS-NEOPRENE2-022	22	25.2	2.5	0.7	22	0.130
TS-NEOPRENE2-025	25	28.2	2.5	0.7	25	0.145
TS-NEOPRENE2-032	32	35.2	2.5	0.58	32	0.180
TS-NEOPRENE2-038	38	41.2	2.4	0.58	38	0.210
TS-NEOPRENE2-041	41	44.2	2.4	0.58	41	0.238
TS-NEOPRENE2-044	44	47.2	2.4	0.58	44	0.255
TS-NEOPRENE2-051	51	54.7	2.4	0.53	51	0.285
TS-NEOPRENE2-055	55	58.7	2.3	0.53	55	0.300
TS-NEOPRENE2-057	57	60.7	2.3	0.53	57	0.330
TS-NEOPRENE2-060	60	63.7	2.2	0.53	60	0.340
TS-NEOPRENE2-063	63	66.7	2.2	0.46	63	0.355
TS-NEOPRENE2-065	65	68.7	2.2	0.46	65	0.375
TS-NEOPRENE2-070	70	73.7	2.2	0.46	70	0.435
TS-NEOPRENE2-076	76	79.7	2.1	0.44	76	0.470
TS-NEOPRENE2-080	80	83.7	2.1	0.4	80	0.490
TS-NEOPRENE2-083	83	86.7	2.1	0.4	83	0.510
TS-NEOPRENE2-090	90	93.7	2	0.4	90	0.550
TS-NEOPRENE2-095	95	98.7	2	0.4	95	0.570
TS-NEOPRENE2-102	102	106.2	1.8	0.35	102	0.610
TS-NEOPRENE2-108	108	112.2	1.8	0.3	108	0.735
TS-NEOPRENE2-110	110	113.2	1.7	0.3	110	0.755
TS-NEOPRENE2-114	114	118.2	1.7	0.28	114	0.785
TS-NEOPRENE2-120	120	124.2	1.5	0.21	120	0.810
TS-NEOPRENE2-127	127	131.7	1.5	0.21	127	0.860
TS-NEOPRENE2-140	140	144.7	1.4	0.18	140	0.945
TS-NEOPRENE2-152	152	157.2	1.1	0.17	152	1.100
TS-NEOPRENE2-160	160	165.2	0.9	0.15	160	1.146
TS-NEOPRENE2-165	165	170.2	0.9	0.14	165	1.170
TS-NEOPRENE2-178	178	183.2	0.8	0.14	178	1.275
TS-NEOPRENE2-180	180	185.2	0.8	0.14	180	1.300
TS-NEOPRENE2-203	203	208.2	0.6	0.1	203	1.390
TS-NEOPRENE2-230	230	234.2	0.5	0.08	229	1.605
TS-NEOPRENE2-254	254	259.2	0.4	0.07	254	1.780
TS-NEOPRENE2-305	305	310.2	0.2	0.05	305	2.170

# INDUSTRIAL HOSES - ducting and ventilation

## High temperature resistant hoses



### SILICONE 1

**Material:** Red, silicone-coated fibreglass fabric (one layer)

**Reinforcement:** Internal steel wire helix

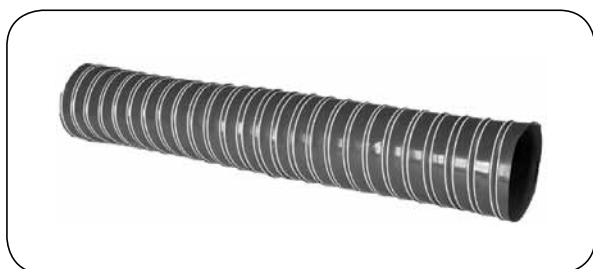
**Working temp.:** From -70°C up to +250°C (with peaks up to +300°C)

Lightweight, very flexible hose designed to remove fumes, air and gases at high temperatures. Not recommended for heavy duty applications. For proper hose selection please contact Sales or Technical Department of TUBES INTERNATIONAL®. Standard length: 4 m.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]
TS-SILICONE1-013	13	15	1.5	0.53	7	0.075
TS-SILICONE1-019	19	21	1.5	0.53	9	0.080
TS-SILICONE1-022	22	24	1.5	0.53	11	0.085
TS-SILICONE1-025	25	27	1.4	0.53	12	0.120
TS-SILICONE1-032	32	34	1.4	0.5	16	0.130
TS-SILICONE1-038	38	40.6	1.4	0.5	19	0.165
TS-SILICONE1-041	41	43.6	1.3	0.45	21	0.177
TS-SILICONE1-044	44	46.6	1.2	0.44	22	0.199
TS-SILICONE1-051	51	53.6	1.2	0.44	25	0.250
TS-SILICONE1-055	55	57.6	1.1	0.44	27	0.270
TS-SILICONE1-057	57	59.6	1.1	0.4	28	0.280
TS-SILICONE1-060	60	62.6	1.1	0.4	30	0.300
TS-SILICONE1-063	63	65.6	1.1	0.4	31	0.320
TS-SILICONE1-065	65	67.6	1.1	0.4	33	0.340
TS-SILICONE1-070	70	73.1	1.1	0.35	35	0.395
TS-SILICONE1-076	76	79.1	1	0.35	38	0.410
TS-SILICONE1-080	80	82.1	1	0.3	40	0.440
TS-SILICONE1-083	83	86.1	1	0.3	41	0.470
TS-SILICONE1-090	90	92.1	0.9	0.29	45	0.490
TS-SILICONE1-095	95	98.1	0.9	0.27	47	0.540
TS-SILICONE1-102	102	105.1	0.9	0.26	51	0.570
TS-SILICONE1-108	108	111.1	0.8	0.23	54	0.680
TS-SILICONE1-110	110	113.1	0.8	0.21	56	0.690
TS-SILICONE1-114	114	117.1	0.8	0.21	57	0.730
TS-SILICONE1-120	120	124.1	0.8	0.19	60	0.760
TS-SILICONE1-127	127	130.1	0.8	0.17	63	0.805
TS-SILICONE1-140	140	143.1	0.8	0.15	70	0.885
TS-SILICONE1-152	152	155.6	0.6	0.14	76	1.050
TS-SILICONE1-160	160	163.9	0.6	0.12	80	1.090
TS-SILICONE1-165	165	168.9	0.6	0.12	85	1.100
TS-SILICONE1-178	178	182.1	0.6	0.1	89	1.210
TS-SILICONE1-180	180	184.1	0.6	0.1	95	1.240
TS-SILICONE1-203	203	207.1	0.5	0.07	101	1.380
TS-SILICONE1-230	230	233.6	0.4	0.06	114	1.490
TS-SILICONE1-254	254	258.6	0.4	0.05	127	1.650
TS-SILICONE1-305	305	309.6	0.1	0.03	152	2.000

# INDUSTRIAL HOSES - ducting and ventilation

## High temperature resistant hoses



### SILICONE 2

**Material:** Red, silicone-coated fibreglass fabric (two layers)  
**Reinforcement:** Internal steel wire helix  
**Working temp.:** From -70°C up to +250°C (with peaks up to +300°C)

More robust version of SILICONE 1 hose. Designed to remove fumes, air and gases at high temperatures. Not recommended for heavy duty applications. For proper hose selection please contact Sales or Technical Department of TUBES INTERNATIONAL®. Standard length: 4 m.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]
TS-SILICONE2-013	13	15.6	2.6	0.7	13	0.155
TS-SILICONE2-019	19	21.6	2.5	0.7	19	0.185
TS-SILICONE2-022	22	25.2	2.5	0.7	22	0.205
TS-SILICONE2-025	25	28.2	2.5	0.7	25	0.220
TS-SILICONE2-032	32	35.2	2.5	0.58	32	0.240
TS-SILICONE2-038	38	41.2	2.4	0.58	38	0.300
TS-SILICONE2-041	41	44.2	2.4	0.58	41	0.315
TS-SILICONE2-044	44	47.2	2.4	0.58	44	0.335
TS-SILICONE2-051	51	54.7	2.4	0.53	51	0.350
TS-SILICONE2-055	55	58.7	2.3	0.53	55	0.410
TS-SILICONE2-057	57	60.7	2.3	0.53	57	0.420
TS-SILICONE2-060	60	63.7	2.2	0.53	60	0.460
TS-SILICONE2-063	63	66.7	2.2	0.46	63	0.480
TS-SILICONE2-065	65	68.7	2.2	0.46	65	0.490
TS-SILICONE2-070	70	73.7	2.2	0.46	70	0.520
TS-SILICONE2-076	76	79.7	2.1	0.44	76	0.570
TS-SILICONE2-080	80	83.7	2.1	0.4	80	0.610
TS-SILICONE2-083	83	86.7	2.1	0.4	83	0.630
TS-SILICONE2-090	90	93.7	2	0.4	90	0.680
TS-SILICONE2-095	95	98.7	2	0.4	95	0.720
TS-SILICONE2-102	102	106.2	1.8	0.35	102	0.760
TS-SILICONE2-108	108	112.2	1.8	0.3	108	0.810
TS-SILICONE2-110	110	113.2	1.7	0.3	110	0.860
TS-SILICONE2-114	114	118.2	1.7	0.28	114	0.890
TS-SILICONE2-120	120	124.2	1.5	0.21	120	0.940
TS-SILICONE2-127	127	131.7	1.5	0.21	127	1.000
TS-SILICONE2-140	140	144.7	1.4	0.18	140	1.110
TS-SILICONE2-152	152	157.2	1.1	0.17	152	1.200
TS-SILICONE2-160	160	165.2	0.9	0.15	160	1.270
TS-SILICONE2-165	165	170.2	0.9	0.14	165	1.310
TS-SILICONE2-178	178	183.2	0.8	0.14	178	1.420
TS-SILICONE2-180	180	185.2	0.8	0.14	180	1.470
TS-SILICONE2-203	203	208.2	0.6	0.1	203	1.640
TS-SILICONE2-230	230	234.2	0.5	0.08	229	1.900
TS-SILICONE2-254	254	259.2	0.4	0.07	254	2.130
TS-SILICONE2-305	305	310.2	0.2	0.05	305	2.570

## INDUSTRIAL HOSES - ducting and ventilation

### High temperature resistant hoses



#### KEVLAR SI CL

**Material:** One-side silicone-coated  
Kevlar fabric

**Wall thickness:** 0.4 mm

**Reinforcement:** Steel wire helix

**Working temp.:** From -60°C up to +300°C

Lightweight, very flexible hose designed to transfer fumes and gases at high temperatures. For proper hose selection please contact Sales or Technical Department of TUBES INTERNATIONAL®. Other diameters available in the range of 50 ÷ 508 mm.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-KEVLAR-CL-050	50	0.9	0.32	30	0.50	3 or 6
SC-KEVLAR-CL-060	60	0.78	0.22	36	0.60	3 or 6
SC-KEVLAR-CL-076	76	0.62	0.14	45	0.75	3 or 6
SC-KEVLAR-CL-080	80	0.61	0.12	48	0.80	3 or 6
SC-KEVLAR-CL-102	102	0.51	0.08	60	0.90	3 or 6
SC-KEVLAR-CL-112	112	0.48	0.06	66	0.92	3 or 6
SC-KEVLAR-CL-120	120	0.36	0.05	72	1.00	3 or 6
SC-KEVLAR-CL-127	127	0.33	0.05	75	1.02	3 or 6
SC-KEVLAR-CL-152	152	0.22	0.04	90	1.25	3 or 6
SC-KEVLAR-CL-160	160	0.21	0.03	96	1.28	3 or 6
SC-KEVLAR-CL-180	180	0.17	0.02	126	1.48	3 or 6
SC-KEVLAR-CL-203	203	0.15	0.02	140	1.65	3 or 6
SC-KEVLAR-CL-254	254	0.1	0.01	175	2.00	3 or 6
SC-KEVLAR-CL-305	305	0.07	0.01	210	2.25	3 or 6
SC-KEVLAR-CL-350	350	0.06	0.01	245	2.70	3 or 6
SC-KEVLAR-CL-407	407	0.04	0.01	320	3.15	3 or 6
SC-KEVLAR-CL-508	508	0.04	0.01	400	4.20	3 or 6

# INDUSTRIAL HOSES - ducting and ventilation

## High temperature resistant hoses



### SILICONE CL

**Material:** Silver-grey silicone-coated  
fibreglass fabric

**Wall thickness:** 0.4 mm

**Reinforcement:** Steel wire helix

**Working temp.:** From -60°C up to +300°C

Lightweight, very flexible hose designed to transfer fumes and gases at high temperatures. For proper hose selection please contact Sales or Technical Department of TUBES INTERNATIONAL®. Other diameters available in the range of 50 ÷ 508 mm.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-SILICON CL-060	60	0.68	0.22	36	0.50	3 or 6
SC-SILICON-CL-076	76	0.47	0.14	45	0.60	3 or 6
SC-SILICON-CL-080	80	0.43	0.13	48	0.62	3 or 6
SC-SILICON-CL-102	102	0.3	0.08	60	0.65	3 or 6
SC-SILICON-CL-110	110	0.25	0.07	66	0.70	3 or 6
SC-SILICON-CL-120	120	0.22	0.06	72	0.72	3 or 6
SC-SILICON-CL-127	127	0.21	0.05	75	0.80	3 or 6
SC-SILICON-CL-152	152	0.16	0.04	90	0.90	3 or 6
SC-SILICON-CL-160	160	0.14	0.03	96	0.94	3 or 6
SC-SILICON-CL-180	180	0.12	0.02	108	1.00	3 or 6
SC-SILICON-CL-203	203	0.1	0.02	120	1.21	3 or 6
SC-SILICON-CL-254	254	0.07	0.01	175	1.70	3 or 6
SC-SILICON-CL-305	305	0.05	0.01	210	2.13	3 or 6
SC-SILICON-CL-350	350	0.04	0.01	245	2.50	3 or 6
SC-SILICON-CL-407	407	0.03	0.01	280	3.10	3 or 6
SC-SILICON-CL-508	508	0.02	0.01	400	4.15	3 or 6

# INDUSTRIAL HOSES - ducting and ventilation

## High temperature resistant hoses



### GRIPFLEX 400

**Material:** Coated fibreglass fabric  
**Reinforcement:** Steel wire helix, steel wear strip  
**Working temp.:** From -120°C up to +400°C  
 (with peaks up to +450°C)

Lightweight, very flexible hose designed to transfer hot air, exhaust fumes and other emissions. Flammability, compliant with SOLAS. Does not contain plasticizers, silicone or halogen compounds. Good resistance to oils. Limited ability to bend constantly. Widely used in metallurgical industry. Intended for vacuum only. A version with stainless steel wire helix is also available (from 80 mm diameter).

code	I.D. [mm]	working press. [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TS-GRIP400-050	50	-	0.32	30	0.40	2 ÷ 10
TS-GRIP400-060	60	-	0.22	36	0.50	2 ÷ 10
TS-GRIP400-065	65	-	0.19	39	0.50	2 ÷ 10
TS-GRIP400-070	70	-	0.16	42	0.50	2 ÷ 10
TS-GRIP400-075	75	-	0.14	45	0.60	2 ÷ 10
TS-GRIP400-080	80	-	0.125	48	0.60	2 ÷ 10
TS-GRIP400-090	90	-	0.1	54	0.60	2 ÷ 10
TS-GRIP400-100	100	-	0.08	60	0.60	2 ÷ 10
TS-GRIP400-110	110	-	0.066	66	0.70	2 ÷ 10
TS-GRIP400-120	120	-	0.056	72	0.70	2 ÷ 10
TS-GRIP400-125	125	-	0.05	75	0.80	2 ÷ 10
TS-GRIP400-130	130	-	0.047	78	0.80	2 ÷ 10
TS-GRIP400-140	140	-	0.041	84	0.80	2 ÷ 10
TS-GRIP400-150	150	-	0.036	90	0.90	2 ÷ 10
TS-GRIP400-160	160	-	0.031	96	0.90	2 ÷ 10
TS-GRIP400-170	170	-	0.028	102	0.90	2 ÷ 10
TS-GRIP400-175	175	-	0.026	105	1.00	2 ÷ 10
TS-GRIP400-180	180	-	0.025	108	1.00	2 ÷ 10
TS-GRIP400-200	200	-	0.02	120	1.20	2 ÷ 10
TS-GRIP400-215	215	-	0.018	129	1.30	2 ÷ 10
TS-GRIP400-225	225	-	0.016	135	1.40	2 ÷ 10
TS-GRIP400-250	250	-	0.013	175	1.60	2 ÷ 10
TS-GRIP400-275	275	-	0.011	193	1.90	2 ÷ 10
TS-GRIP400-300	300	-	0.009	210	2.10	2 ÷ 10
TS-GRIP400-315	315	-	0.008	221	2.10	2 ÷ 10
TS-GRIP400-325	325	-	0.008	228	2.20	2 ÷ 10
TS-GRIP400-350	350	-	0.007	245	2.50	2 ÷ 10
TS-GRIP400-375	375	-	0.006	263	2.90	2 ÷ 10
TS-GRIP400-400	400	-	0.005	280	3.10	2 ÷ 10
TS-GRIP400-450	450	-	0.004	360	3.60	2 ÷ 10
TS-GRIP400-500	500	-	0.003	400	4.10	2 ÷ 10
TS-GRIP400-600	600	-	0.002	480	5.10	2 ÷ 10
TS-GRIP400-700	700	-	0.002	560	6.00	2 ÷ 10
TS-GRIP400-800	800	-	0.001	640	6.90	2 ÷ 10
TS-GRIP400-900	900	-	0.001	720	7.80	2 ÷ 10

# INDUSTRIAL HOSES - ducting and ventilation

## High temperature resistant hoses



### GRIPFLEX 450

**Internal layer:** Fibreglass fabric  
**Cover:** Silicone-coated fibreglass fabric  
**Reinforcement:** Steel wire helix, steel wear strip  
**Working temp.:** From -60°C up to +450°C  
 (with peaks up to +500°C)

Lightweight, very flexible hose designed to transfer hot air, exhaust fumes and other emissions. Resistant to oils and UV, flammability. Widely used in metallurgical, automotive and aircraft industry. A version with stainless steel wire helix is also available (from 80 mm diameter)

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TS-GRIP450-050	50	0.9	0.32	30	0.60	2 ÷ 10
TS-GRIP450-060	60	0.78	0.22	36	0.70	2 ÷ 10
TS-GRIP450-065	65	0.68	0.19	39	0.80	2 ÷ 10
TS-GRIP450-070	70	0.67	0.16	42	0.90	2 ÷ 10
TS-GRIP450-075	75	0.62	0.14	45	1.00	2 ÷ 10
TS-GRIP450-080	80	0.61	0.125	48	1.00	2 ÷ 10
TS-GRIP450-090	90	0.56	0.1	54	1.20	2 ÷ 10
TS-GRIP450-100	100	0.51	0.08	60	1.30	2 ÷ 10
TS-GRIP450-110	110	0.48	0.066	66	1.30	2 ÷ 10
TS-GRIP450-120	120	0.36	0.056	72	1.40	2 ÷ 10
TS-GRIP450-125	125	0.33	0.05	75	1.40	2 ÷ 10
TS-GRIP450-130	130	0.28	0.047	78	1.60	2 ÷ 10
TS-GRIP450-140	140	0.25	0.041	84	1.60	2 ÷ 10
TS-GRIP450-150	150	0.22	0.036	90	1.80	2 ÷ 10
TS-GRIP450-160	160	0.21	0.031	96	1.80	2 ÷ 10
TS-GRIP450-170	170	0.19	0.028	102	2.00	2 ÷ 10
TS-GRIP450-175	175	0.185	0.026	105	2.10	2 ÷ 10
TS-GRIP450-180	180	0.17	0.025	108	2.10	2 ÷ 10
TS-GRIP450-200	200	0.15	0.02	120	2.30	2 ÷ 10
TS-GRIP450-215	215	0.13	0.018	129	2.40	2 ÷ 10
TS-GRIP450-225	225	0.12	0.016	135	2.40	2 ÷ 10
TS-GRIP450-250	250	0.1	0.013	175	2.60	2 ÷ 10
TS-GRIP450-275	275	0.08	0.011	193	2.70	2 ÷ 10
TS-GRIP450-300	300	0.08	0.009	210	2.75	2 ÷ 10
TS-GRIP450-315	315	0.06	0.008	221	2.80	2 ÷ 10
TS-GRIP450-325	325	0.06	0.008	228	2.90	2 ÷ 10
TS-GRIP450-350	350	0.05	0.007	245	3.05	2 ÷ 10
TS-GRIP450-375	375	0.05	0.006	263	3.20	2 ÷ 10
TS-GRIP450-400	400	0.05	0.005	280	3.40	2 ÷ 10
TS-GRIP450-450	450	0.04	0.004	360	4.00	2 ÷ 10
TS-GRIP450-500	500	0.04	0.003	400	4.50	2 ÷ 10
TS-GRIP450-600	600	0.04	0.002	480	5.60	2 ÷ 10
TS-GRIP450-700	700	0.03	0.002	560	6.60	2 ÷ 10
TS-GRIP450-800	800	0.02	0.001	640	7.60	2 ÷ 10
TS-GRIP450-900	900	0.02	0.001	720	8.60	2 ÷ 10

# INDUSTRIAL HOSES - ducting and ventilation

## High temperature resistant hoses



### GRIPFLEX 650

**Material:** Two-layer fibreglass fabric with stainless steel yarn woven through  
**Reinforcement:** Steel wire helix, steel wear strip  
**Working temp.:** From -120°C up to +650°C

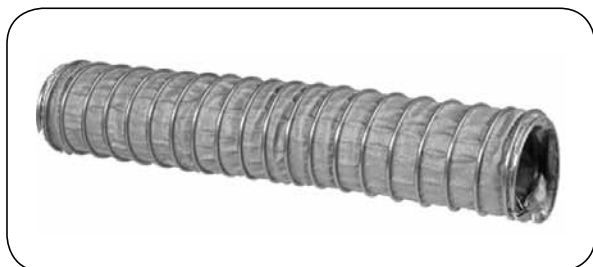
Lightweight, very flexible hose designed to transfer hot air, exhaust fumes and other emissions. Good resistance to oils, UV and vibration, flammability, silicone-free. Limited ability to constant bending. Widely used in metallurgical, automotive, aircraft and shipbuilding industry. Intended for vacuum only. A version with stainless steel wire helix is also available (from 80 mm diameter)

code	I.D. [mm]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TS-GRIP650-060	60	0.32	36	1.35	2 ÷ 10
TS-GRIP650-065	65	0.3	39	1.45	2 ÷ 10
TS-GRIP650-070	70	0.27	42	1.50	2 ÷ 10
TS-GRIP650-075	75	0.26	45	1.65	2 ÷ 10
TS-GRIP650-080	80	0.23	48	1.80	2 ÷ 10
TS-GRIP650-090	90	0.21	54	1.80	2 ÷ 10
TS-GRIP650-100	100	0.17	60	1.80	2 ÷ 10
TS-GRIP650-110	110	0.14	66	1.90	2 ÷ 10
TS-GRIP650-120	120	0.12	72	2.00	2 ÷ 10
TS-GRIP650-125	125	0.11	75	2.10	2 ÷ 10
TS-GRIP650-130	130	0.1	78	2.10	2 ÷ 10
TS-GRIP650-140	140	0.09	84	2.10	2 ÷ 10
TS-GRIP650-150	150	0.08	90	2.20	2 ÷ 10
TS-GRIP650-160	160	0.07	96	2.40	2 ÷ 10
TS-GRIP650-170	170	0.06	102	2.50	2 ÷ 10
TS-GRIP650-175	175	0.06	105	2.80	2 ÷ 10
TS-GRIP650-180	180	0.05	108	2.80	2 ÷ 10
TS-GRIP650-200	200	0.04	120	3.00	2 ÷ 10
TS-GRIP650-215	215	0.04	129	3.20	2 ÷ 10
TS-GRIP650-225	225	0.04	135	3.40	2 ÷ 10
TS-GRIP650-250	250	0.03	175	3.55	2 ÷ 10
TS-GRIP650-275	275	0.02	193	4.20	2 ÷ 10
TS-GRIP650-300	300	0.02	210	4.40	2 ÷ 10
TS-GRIP650-315	315	0.02	221	4.50	2 ÷ 10
TS-GRIP650-325	325	0.02	228	4.70	2 ÷ 10
TS-GRIP650-350	350	0.015	245	5.00	2 ÷ 10
TS-GRIP650-375	375	0.01	263	5.50	2 ÷ 10
TS-GRIP650-400	400	0.01	280	5.90	2 ÷ 10
TS-GRIP650-450	450	0.009	360	6.70	2 ÷ 10
TS-GRIP650-500	500	0.007	400	7.40	2 ÷ 10
TS-GRIP650-600	600	0.005	480	9.00	2 ÷ 10
TS-GRIP650-700	700	0.004	560	10.10	2 ÷ 10
TS-GRIP650-800	800	0.003	640	11.60	2 ÷ 10
TS-GRIP650-900	900	0.003	720	13.20	2 ÷ 10



# INDUSTRIAL HOSES - ducting and ventilation

## High temperature resistant hoses



### GRIPFLEX 1100

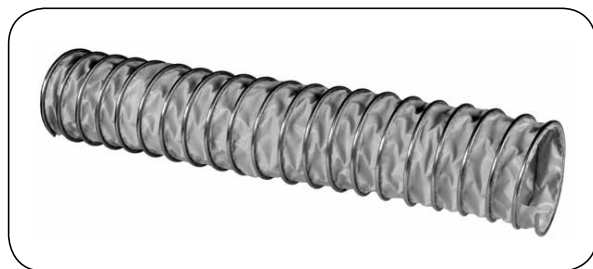
**Material:** Coated fibreglass fabric (outer)  
 (three layers) Insulation fabric (middle)  
 Stainless steel fabric (inner)  
**Reinforcement:** External AISI 409 steel wire helix  
**Working temp.:** From -120°C up to +1100°C

Lightweight, very flexible hose designed to transfer hot air, exhaust fumes and other emissions. Good resistance to oils and UV, flammability, silicone-free and halogen-free. Limited ability to constant bending. Widely used in metallurgical, automotive, aircraft and shipbuilding industry. Intended for vacuum only. A version with stainless steel wire helix is also available (from 80 mm diameter)

code	I.D. [mm]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TS-GRIP1100-075	75	0.31	45	1.10	2 ÷ 10
TS-GRIP1100-080	80	0.28	48	1.20	2 ÷ 10
TS-GRIP1100-090	90	0.25	54	1.20	2 ÷ 10
TS-GRIP1100-100	100	0.2	60	1.20	2 ÷ 10
TS-GRIP1100-110	110	0.17	66	1.30	2 ÷ 10
TS-GRIP1100-120	120	0.14	72	1.30	2 ÷ 10
TS-GRIP1100-125	125	0.13	75	1.50	2 ÷ 10
TS-GRIP1100-130	130	0.12	78	1.50	2 ÷ 10
TS-GRIP1100-140	140	0.11	84	1.50	2 ÷ 10
TS-GRIP1100-150	150	0.09	90	1.70	2 ÷ 10
TS-GRIP1100-160	160	0.08	96	1.70	2 ÷ 10
TS-GRIP1100-170	170	0.07	102	1.70	2 ÷ 10
TS-GRIP1100-175	175	0.07	105	2.00	2 ÷ 10
TS-GRIP1100-180	180	0.06	108	2.00	2 ÷ 10
TS-GRIP1100-200	200	0.05	120	2.20	2 ÷ 10
TS-GRIP1100-215	215	0.05	129	2.40	2 ÷ 10
TS-GRIP1100-225	225	0.04	135	2.70	2 ÷ 10
TS-GRIP1100-250	250	0.04	175	3.00	2 ÷ 10
TS-GRIP1100-275	275	0.03	193	3.50	2 ÷ 10
TS-GRIP1100-300	300	0.02	210	3.90	2 ÷ 10
TS-GRIP1100-315	315	0.02	221	4.00	2 ÷ 10
TS-GRIP1100-325	325	0.02	228	4.20	2 ÷ 10
TS-GRIP1100-350	350	0.018	245	4.60	2 ÷ 10
TS-GRIP1100-375	375	0.016	263	5.40	2 ÷ 10
TS-GRIP1100-400	400	0.014	280	5.80	2 ÷ 10
TS-GRIP1100-450	450	0.011	360	6.70	2 ÷ 10
TS-GRIP1100-500	500	0.009	400	7.60	2 ÷ 10
TS-GRIP1100-600	600	0.006	480	9.60	2 ÷ 10
TS-GRIP1100-700	700	0.005	560	11.10	2 ÷ 10
TS-GRIP1100-800	800	0.004	640	12.80	2 ÷ 10
TS-GRIP1100-900	900	0.003	720	14.50	2 ÷ 10

# INDUSTRIAL HOSES - ducting and ventilation

## Chemical resistant hoses



### PVC SE-V

**Material:** Yellow PVC impregnated polyester fabric

**Reinforcement:** External steel wire helix and steel wear strip

**Working temp.:** From -20°C up to +70°C

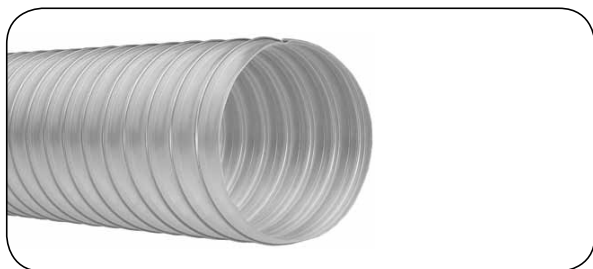
Lightweight, flexible, highly compressible hose resistant to chemicals. Flame retardant, designed for ventilation and heating systems. Other colours and a version with stainless steel wire helix is also available (from 80 mm diameter). AS version - antistatic ( $R < 10^8 \Omega$ ), colour: black.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TS-PVCSEV-050	50	0.9	0.32	30	0.40	2 ÷ 10
TS-PVCSEV-060	60	0.78	0.222	36	0.50	2 ÷ 10
TS-PVCSEV-065	65	0.68	0.19	39	0.50	2 ÷ 10
TS-PVCSEV-070	70	0.67	0.16	42	0.50	2 ÷ 10
TS-PVCSEV-075	75	0.62	0.14	45	0.60	2 ÷ 10
TS-PVCSEV-080	80	0.61	0.125	48	0.60	2 ÷ 10
TS-PVCSEV-090	90	0.56	0.1	54	0.60	2 ÷ 10
TS-PVCSEV-100	100	0.51	0.08	60	0.60	2 ÷ 10
TS-PVCSEV-110	110	0.48	0.066	66	0.70	2 ÷ 10
TS-PVCSEV-120	120	0.36	0.056	72	0.70	2 ÷ 10
TS-PVCSEV-125	125	0.33	0.05	75	0.80	2 ÷ 10
TS-PVCSEV-130	130	0.28	0.047	78	0.80	2 ÷ 10
TS-PVCSEV-140	140	0.25	0.041	84	0.80	2 ÷ 10
TS-PVCSEV-150	150	0.22	0.036	90	0.90	2 ÷ 10
TS-PVCSEV-160	160	0.21	0.031	96	0.90	2 ÷ 10
TS-PVCSEV-170	170	0.19	0.028	102	0.90	2 ÷ 10
TS-PVCSEV-175	175	0.185	0.026	105	1.00	2 ÷ 10
TS-PVCSEV-180	180	0.172	0.025	108	1.00	2 ÷ 10
TS-PVCSEV-200	200	0.148	0.02	120	1.20	2 ÷ 10
TS-PVCSEV-215	215	0.128	0.018	129	1.30	2 ÷ 10
TS-PVCSEV-225	225	0.115	0.016	135	1.40	2 ÷ 10
TS-PVCSEV-250	250	0.1	0.013	175	1.60	2 ÷ 10
TS-PVCSEV-275	275	0.08	0.011	193	1.90	2 ÷ 10
TS-PVCSEV-300	300	0.07	0.009	210	2.10	2 ÷ 10
TS-PVCSEV-315	315	0.062	0.008	221	2.10	2 ÷ 10
TS-PVCSEV-325	325	0.059	0.008	228	2.20	2 ÷ 10
TS-PVCSEV-350	350	0.056	0.007	245	2.50	2 ÷ 10
TS-PVCSEV-375	375	0.05	0.006	263	2.90	2 ÷ 10
TS-PVCSEV-400	400	0.047	0.005	280	3.10	2 ÷ 10
TS-PVCSEV-450	450	0.045	0.004	360	3.60	2 ÷ 10
TS-PVCSEV-500	500	0.043	0.003	400	4.10	2 ÷ 10
TS-PVCSEV-600	600	0.039	0.002	480	5.10	2 ÷ 10
TS-PVCSEV-700	700	0.031	0.002	560	6.00	2 ÷ 10
TS-PVCSEV-800	800	0.022	0.001	640	6.90	2 ÷ 10
TS-PVCSEV-900	900	0.016	0.001	720	7.80	2 ÷ 10

Code example for AS version: TS-PVCSEVAS-050

# INDUSTRIAL HOSES - ducting and ventilation

## Chemical resistant hoses



### P 2 PE

**Material:** Translucent polyethylene  
**Wall thickness:** 0.4 mm  
**Reinforcement:** Steel wire helix  
**Working temp.:** From -40°C up to +60°C

Lightweight, very flexible hose designed to transfer highly aggressive chemical fumes, solvents and gases. Mainly used in chemical industry. Other diameters available in the range of 40 ÷ 610 mm.

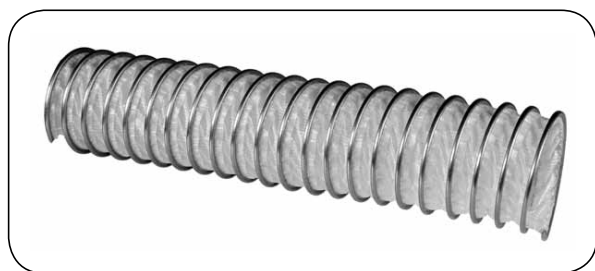
EL version - electrically conductive ( $R < 10^4 \Omega$ ) - TRBS 2153, colour: black.

code	I.D. [mm]	wire [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-P2PE-050	50	1	0.4	0.16	35	0.14	10
SC-P2PE-060	60	1	0.4	0.16	42	0.17	10
SC-P2PE-070	70	1	0.3	0.12	49	0.20	10
SC-P2PE-075	75	1	0.3	0.1	53	0.21	10
SC-P2PE-080	80	1	0.3	0.1	56	0.22	10
SC-P2PE-090	90	1	0.25	0.09	63	0.25	10
SC-P2PE-100	100	1.2	0.2	0.09	70	0.28	10
SC-P2PE-110	110	1.2	0.2	0.08	78	0.32	10
SC-P2PE-120	120	1.2	0.2	0.08	85	0.35	10
SC-P2PE-125	125	1.2	0.1	0.08	85	0.35	10
SC-P2PE-130	130	1.2	0.1	0.06	92	0.38	10
SC-P2PE-140	140	1.2	0.1	0.06	99	0.41	10
SC-P2PE-150	150	1.2	0.1	0.06	100	0.43	10
SC-P2PE-160	160	1.2	0.09	0.05	113	0.51	10
SC-P2PE-170	170	2	0.09	0.05	120	0.59	10
SC-P2PE-175	175	2	0.09	0.05	123	0.71	10
SC-P2PE-180	180	2	0.08	0.05	127	0.71	10
SC-P2PE-200	200	2	0.08	0.05	140	0.81	10
SC-P2PE-250	250	2	0.05	0.04	175	1.01	10
SC-P2PE-300	300	2	0.03	0.03	210	1.22	10
SC-P2PE-350	350	2	0.02	0.02	245	1.42	10
SC-P2PE-400	400	2	0.02	0.02	280	1.62	10
SC-P2PE-450	450	2	0.01	0.01	315	1.83	10
SC-P2PE-500	500	2	0.01	0.01	350	2.03	10

Code example for EL version: SC-P2PEEL-040

# INDUSTRIAL HOSES - ducting and ventilation

## Chemical resistant hoses



### GRIPFLEX PE

**Material:** Polyethylene

**Reinforcement:** External steel wire helix and steel wear strip

**Working temp.:** From -40°C up to +85°C

Lightweight, flexible hose designed to transfer aggressive chemical fumes and gases. Used in chemical industry. A version with stainless steel wire helix is also available (from 80 mm diameter)

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TS-PE-050	50	0.9	0.4	30	0.40	2 ÷ 10
TS-PE-060	60	0.78	0.28	36	0.50	2 ÷ 10
TS-PE-065	65	0.68	0.24	39	0.50	2 ÷ 10
TS-PE-070	70	0.67	0.21	42	0.50	2 ÷ 10
TS-PE-075	75	0.62	0.18	45	0.50	2 ÷ 10
TS-PE-080	80	0.61	0.16	48	0.60	2 ÷ 10
TS-PE-090	90	0.56	0.12	54	0.60	2 ÷ 10
TS-PE-100	100	0.51	0.1	60	0.60	2 ÷ 10
TS-PE-110	110	0.48	0.08	66	0.60	2 ÷ 10
TS-PE-120	120	0.36	0.07	72	0.60	2 ÷ 10
TS-PE-125	125	0.33	0.06	75	0.70	2 ÷ 10
TS-PE-130	130	0.28	0.06	78	0.70	2 ÷ 10
TS-PE-140	140	0.25	0.05	84	0.70	2 ÷ 10
TS-PE-150	150	0.22	0.04	90	0.80	2 ÷ 10
TS-PE-160	160	0.21	0.04	96	0.80	2 ÷ 10
TS-PE-170	170	0.19	0.04	102	0.80	2 ÷ 10
TS-PE-175	175	0.185	0.03	105	0.90	2 ÷ 10
TS-PE-180	180	0.17	0.03	108	0.90	2 ÷ 10
TS-PE-200	200	0.15	0.02	120	1.00	2 ÷ 10
TS-PE-215	215	1.13	0.02	129	1.10	2 ÷ 10
TS-PE-225	225	0.12	0.02	135	1.10	2 ÷ 10
TS-PE-250	250	0.1	0.02	175	1.30	2 ÷ 10
TS-PE-275	275	0.08	0.01	193	1.40	2 ÷ 10
TS-PE-300	300	0.08	0.01	210	1.50	2 ÷ 10
TS-PE-315	315	0.06	0.01	221	1.60	2 ÷ 10
TS-PE-325	325	0.06	0.01	228	1.70	2 ÷ 10
TS-PE-350	350	0.05	0.008	245	1.90	2 ÷ 10
TS-PE-375	375	0.05	0.007	263	2.20	2 ÷ 10
TS-PE-400	400	0.05	0.006	280	2.40	2 ÷ 10
TS-PE-450	450	0.04	0.005	360	2.70	2 ÷ 10
TS-PE-500	500	0.04	0.004	400	3.10	2 ÷ 10
TS-PE-600	600	0.04	0.003	480	3.90	2 ÷ 10
TS-PE-700	700	0.03	0.002	560	4.50	2 ÷ 10
TS-PE-800	800	0.02	0.002	640	5.20	2 ÷ 10
TS-PE-900	900	0.02	0.001	720	6.00	2 ÷ 10

# INDUSTRIAL HOSES - ducting and ventilation

## Chemical resistant hoses



### P 2 PP

**Material:** Black polypropylene  
**Wall thickness:** 0.4 mm  
**Reinforcement:** Steel wire helix  
**Working temp.:** From -20°C up to +100°C

Lightweight, very flexible hose of good chemical and UV radiation resistance; halogen-free. Designed to remove air, fumes and gases. Used in ventilation and air-conditioning systems in automotive industry. Other diameters available in the range of 30 ÷ 610 mm.

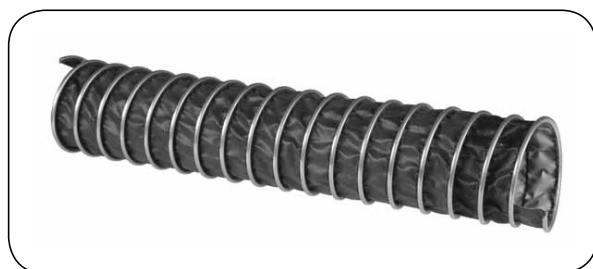
SE version - flame retardant, compliant with DIN 4102 B1.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-P2PP-040	40	0.4	0.18	28	0.19	10
SC-P2PP-050	50	0.35	0.15	35	0.24	10
SC-P2PP-060	60	0.35	0.14	42	0.29	10
SC-P2PP-070	70	0.3	0.12	49	0.34	10
SC-P2PP-080	80	0.25	0.09	56	0.39	10
SC-P2PP-100	100	0.2	0.08	70	0.50	10
SC-P2PP-120	120	0.2	0.07	85	0.60	10
SC-P2PP-125	125	0.15	0.06	88	0.62	10
SC-P2PP-140	140	0.1	0.06	95	0.70	10
SC-P2PP-150	150	0.08	0.05	105	0.73	10
SC-P2PP-175	175	0.06	0.04	123	0.81	10
SC-P2PP-200	200	0.05	0.03	140	0.99	10
SC-P2PP-250	250	0.04	0.03	175	1.23	10
SC-P2PP-300	300	0.032	0.02	210	1.49	10

Code example for SE version: SC-P2PPSE-040

# INDUSTRIAL HOSES - ducting and ventilation

## Chemical resistant hoses



### GRIPFLEX HYPALON

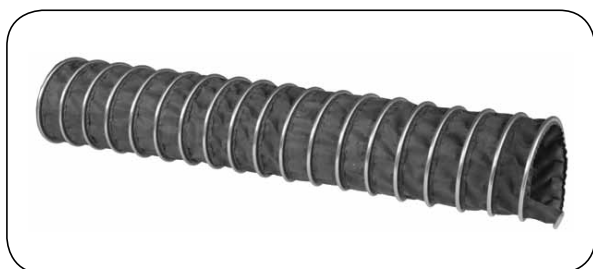
**Material:** Hypalon impregnated polyester fabric  
**Reinforcement:** External steel wire helix and steel wear strip  
**Working temp.:** From -40°C up to +175°C (with peaks up to +190°C)

Flexible hose designed to remove air, chemically aggressive fumes, exhaust fumes and gases in ventilation and heating systems. Flame retardant, resistant to UV radiation, ozone and weather conditions. Used in chemical industry. A version with stainless steel wire helix is also available (from 80 mm diameter)

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TS-HYPALON-050	50	0.9	0.4	30	0.40	2 ÷ 10
TS-HYPALON-060	60	0.78	0.278	36	0.50	2 ÷ 10
TS-HYPALON-065	65	0.68	0.237	39	0.50	2 ÷ 10
TS-HYPALON-070	70	0.67	0.204	42	0.50	2 ÷ 10
TS-HYPALON-075	75	0.62	0.178	45	0.60	2 ÷ 10
TS-HYPALON-080	80	0.61	0.156	48	0.60	2 ÷ 10
TS-HYPALON-090	90	0.56	0.123	54	0.60	2 ÷ 10
TS-HYPALON-100	100	0.51	0.1	60	0.60	2 ÷ 10
TS-HYPALON-110	110	0.48	0.083	66	0.70	2 ÷ 10
TS-HYPALON-120	120	0.36	0.07	72	0.70	2 ÷ 10
TS-HYPALON-125	125	0.33	0.064	75	0.80	2 ÷ 10
TS-HYPALON-130	130	0.28	0.059	78	0.80	2 ÷ 10
TS-HYPALON-140	140	0.25	0.051	84	0.80	2 ÷ 10
TS-HYPALON-150	150	0.22	0.044	90	0.90	2 ÷ 10
TS-HYPALON-160	160	0.21	0.039	96	0.90	2 ÷ 10
TS-HYPALON-170	170	0.19	0.035	102	0.90	2 ÷ 10
TS-HYPALON-175	175	0.185	0.033	105	1.00	2 ÷ 10
TS-HYPALON-180	180	0.172	0.031	108	1.00	2 ÷ 10
TS-HYPALON-200	200	0.148	0.025	120	1.20	2 ÷ 10
TS-HYPALON-215	215	0.128	0.022	129	1.30	2 ÷ 10
TS-HYPALON-225	225	0.115	0.02	135	1.40	2 ÷ 10
TS-HYPALON-250	250	0.1	0.016	175	1.60	2 ÷ 10
TS-HYPALON-275	275	0.08	0.013	193	1.90	2 ÷ 10
TS-HYPALON-300	300	0.07	0.011	210	2.10	2 ÷ 10
TS-HYPALON-315	315	0.062	0.01	221	2.10	2 ÷ 10
TS-HYPALON-325	325	0.059	0.01	228	2.20	2 ÷ 10
TS-HYPALON-350	350	0.056	0.008	245	2.50	2 ÷ 10
TS-HYPALON-375	375	0.05	0.007	263	2.90	2 ÷ 10
TS-HYPALON-400	400	0.047	0.006	280	3.10	2 ÷ 10
TS-HYPALON-450	450	0.045	0.005	360	3.60	2 ÷ 10
TS-HYPALON-500	500	0.043	0.004	400	4.10	2 ÷ 10
TS-HYPALON-600	600	0.039	0.003	480	5.10	2 ÷ 10
TS-HYPALON-700	700	0.031	0.002	560	6.00	2 ÷ 10
TS-HYPALON-800	800	0.022	0.002	640	6.90	2 ÷ 10
TS-HYPALON-900	900	0.016	0.001	720	7.80	2 ÷ 10

# INDUSTRIAL HOSES - ducting and ventilation

## Chemical resistant hoses



### GRIPFLEX Viton

**Material:** Viton impregnated polyester fabric

**Reinforcement:** External steel wire helix and steel wear strip

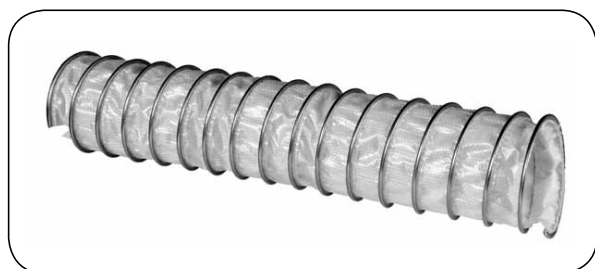
**Working temp.:** From -25°C up to +210°C

Flexible hose designed to remove chemically aggressive fumes and gases. Resistant to chemicals, UV radiation and ozone. Used in varnish, chemical and paper making industry. A version with stainless steel wire helix is also available (from 80 mm diameter)

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TS-Viton-050	50	0.9	0.4	30	0.40	2 ÷ 10
TS-Viton-060	60	0.78	0.278	36	0.50	2 ÷ 10
TS-Viton-065	65	0.68	0.237	39	0.50	2 ÷ 10
TS-Viton-070	70	0.67	0.204	42	0.50	2 ÷ 10
TS-Viton-075	75	0.62	0.178	45	0.60	2 ÷ 10
TS-Viton-080	80	0.61	0.156	48	0.60	2 ÷ 10
TS-Viton-090	90	0.56	0.123	54	0.60	2 ÷ 10
TS-Viton-100	100	0.51	0.1	60	0.60	2 ÷ 10
TS-Viton-110	110	0.48	0.083	66	0.70	2 ÷ 10
TS-Viton-120	120	0.36	0.07	72	0.70	2 ÷ 10
TS-Viton-125	125	0.33	0.064	75	0.80	2 ÷ 10
TS-Viton-130	130	0.28	0.059	78	0.80	2 ÷ 10
TS-Viton-140	140	0.25	0.051	84	0.80	2 ÷ 10
TS-Viton-150	150	0.22	0.044	90	0.90	2 ÷ 10
TS-Viton-160	160	0.21	0.039	96	0.90	2 ÷ 10
TS-Viton-170	170	0.19	0.035	102	0.90	2 ÷ 10
TS-Viton-175	175	0.185	0.033	105	1.00	2 ÷ 10
TS-Viton-180	180	0.172	0.031	108	1.00	2 ÷ 10
TS-Viton-200	200	0.148	0.025	120	1.20	2 ÷ 10
TS-Viton-215	215	0.128	0.022	129	1.30	2 ÷ 10
TS-Viton-225	225	0.115	0.02	135	1.40	2 ÷ 10
TS-Viton-250	250	0.1	0.016	175	1.60	2 ÷ 10
TS-Viton-275	275	0.08	0.013	193	1.90	2 ÷ 10
TS-Viton-300	300	0.07	0.011	210	2.10	2 ÷ 10
TS-Viton-315	315	0.062	0.01	221	2.10	2 ÷ 10
TS-Viton-325	325	0.059	0.01	228	2.20	2 ÷ 10
TS-Viton-350	350	0.056	0.008	245	2.50	2 ÷ 10
TS-Viton-375	375	0.05	0.007	263	2.90	2 ÷ 10
TS-Viton-400	400	0.047	0.006	280	3.10	2 ÷ 10
TS-Viton-450	450	0.045	0.005	360	3.60	2 ÷ 10
TS-Viton-500	500	0.043	0.004	400	4.10	2 ÷ 10
TS-Viton-600	600	0.039	0.003	480	5.10	2 ÷ 10
TS-Viton-700	700	0.031	0.002	560	6.00	2 ÷ 10
TS-Viton-800	800	0.022	0.002	640	6.90	2 ÷ 10
TS-Viton-900	900	0.016	0.001	720	7.80	2 ÷ 10

# INDUSTRIAL HOSES - ducting and ventilation

## Chemical resistant hoses



### GRIPFLEX PETEF

**Material:** PTFE film  
**Cover:** Polyethylene  
**Reinforcement:** External steel wire helix and steel wear strip  
**Working temp.:** From -40°C up to +80°C

Flexible hose designed to remove chemically aggressive fumes, exhaust fumes and gases. Resistant to chemicals, UV radiation and ozone. Widely used in chemical and food industry.

A version with the internal layer of white PTFE film compliant with FDA. A version with stainless steel wire helix is also available (from 80 mm diameter)

EL version - electrically conductive ( $R < 10^4 \Omega$ ), black PTFE film.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TS-PETEF-050	50	0.85	0.32	30	0.40	2 ÷ 10
TS-PETEF-060	60	0.68	0.22	36	0.50	2 ÷ 10
TS-PETEF-065	65	0.59	0.19	39	0.50	2 ÷ 10
TS-PETEF-070	70	0.53	0.16	42	0.50	2 ÷ 10
TS-PETEF-075	75	0.47	0.14	45	0.60	2 ÷ 10
TS-PETEF-080	80	0.43	0.125	48	0.60	2 ÷ 10
TS-PETEF-090	90	0.355	0.1	54	0.60	2 ÷ 10
TS-PETEF-100	100	0.3	0.08	60	0.60	2 ÷ 10
TS-PETEF-110	110	0.258	0.066	66	0.70	2 ÷ 10
TS-PETEF-120	120	0.224	0.056	72	0.70	2 ÷ 10
TS-PETEF-125	125	0.21	0.05	75	0.80	2 ÷ 10
TS-PETEF-130	130	0.197	0.047	78	0.80	2 ÷ 10
TS-PETEF-140	140	0.14	0.041	84	0.80	2 ÷ 10
TS-PETEF-150	150	0.14	0.036	90	0.90	2 ÷ 10
TS-PETEF-160	160	0.14	0.031	96	0.90	2 ÷ 10
TS-PETEF-170	170	0.128	0.028	102	0.90	2 ÷ 10
TS-PETEF-175	175	0.123	0.026	105	1.00	2 ÷ 10
TS-PETEF-180	180	0.117	0.025	108	1.00	2 ÷ 10
TS-PETEF-200	200	0.1	0.02	120	1.20	2 ÷ 10
TS-PETEF-215	215	0.09	0.018	129	1.30	2 ÷ 10
TS-PETEF-225	225	0.08	0.016	135	1.40	2 ÷ 10
TS-PETEF-250	250	0.07	0.013	175	1.60	2 ÷ 10
TS-PETEF-275	275	0.06	0.011	193	1.90	2 ÷ 10
TS-PETEF-300	300	0.05	0.009	210	2.10	2 ÷ 10
TS-PETEF-315	315	0.05	0.008	221	2.10	2 ÷ 10
TS-PETEF-325	325	0.05	0.008	228	2.20	2 ÷ 10
TS-PETEF-350	350	0.04	0.007	245	2.50	2 ÷ 10
TS-PETEF-375	375	0.04	0.006	263	2.90	2 ÷ 10
TS-PETEF-400	400	0.03	0.005	280	3.10	2 ÷ 10
TS-PETEF-450	450	0.03	0.004	360	3.60	2 ÷ 10
TS-PETEF-500	500	0.02	0.003	400	4.10	2 ÷ 10
TS-PETEF-600	600	0.02	0.002	480	5.10	2 ÷ 10
TS-PETEF-700	700	0.01	0.002	560	6.00	2 ÷ 10
TS-PETEF-800	800	0.01	0.001	640	6.90	2 ÷ 10
TS-PETEF-900	900	0.01	0.001	720	7.80	2 ÷ 10

Code example for EL version: TS-PETEFEL-050



# INDUSTRIAL HOSES - ducting and ventilation

## Chemical resistant hoses



### GRIPFLEX HYTEF

**Internal layer:** PTFE-film  
**Cover:** Hypalon-coated polyester fabric  
**Reinforcement:** External steel wire helix + steel wear strip  
**Working temp.:** From -40°C up to +175°C (with peaks up to +190°C)

Lightweight, very flexible hose designed to transfer chemically aggressive fumes and gases. Flame retardant, resistant to UV radiation, ozone and weather conditions. Widely used in paper making, pharmaceutical and chemical industry. A version with the internal layer of white PTFE film compliant with FDA. A version with stainless steel wire helix is also available (from 80 mm diameter)

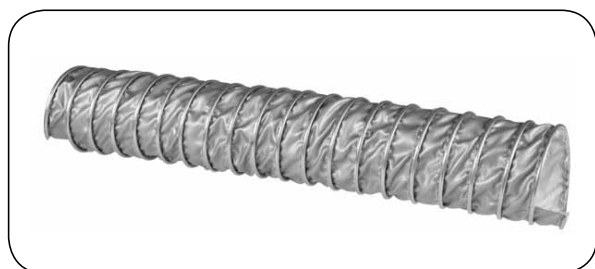
EL version - electrically conductive ( $R < 10^4 \Omega$ ), black PTFE film.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TS-HYTEF-050	50	0.9	0.4	30	0.40	2 ÷ 10
TS-HYTEF-060	60	0.78	0.278	36	0.50	2 ÷ 10
TS-HYTEF-065	65	0.68	0.237	39	0.50	2 ÷ 10
TS-HYTEF-070	70	0.67	0.204	42	0.50	2 ÷ 10
TS-HYTEF-075	75	0.62	0.178	45	0.60	2 ÷ 10
TS-HYTEF-080	80	0.61	0.156	48	0.60	2 ÷ 10
TS-HYTEF-090	90	0.56	0.123	54	0.60	2 ÷ 10
TS-HYTEF-100	100	0.51	0.1	60	0.60	2 ÷ 10
TS-HYTEF-110	110	0.48	0.083	66	0.70	2 ÷ 10
TS-HYTEF-120	120	0.36	0.07	72	0.70	2 ÷ 10
TS-HYTEF-125	125	0.33	0.064	75	0.80	2 ÷ 10
TS-HYTEF-130	130	0.28	0.059	78	0.80	2 ÷ 10
TS-HYTEF-140	140	0.25	0.051	84	0.80	2 ÷ 10
TS-HYTEF-150	150	0.22	0.044	90	0.90	2 ÷ 10
TS-HYTEF-160	160	0.21	0.039	96	0.90	2 ÷ 10
TS-HYTEF-170	170	0.19	0.035	102	0.90	2 ÷ 10
TS-HYTEF-175	175	0.185	0.033	105	1.00	2 ÷ 10
TS-HYTEF-180	180	0.172	0.031	108	1.00	2 ÷ 10
TS-HYTEF-200	200	0.148	0.025	120	1.20	2 ÷ 10
TS-HYTEF-215	215	0.128	0.022	129	1.30	2 ÷ 10
TS-HYTEF-225	225	0.115	0.02	135	1.40	2 ÷ 10
TS-HYTEF-250	250	0.1	0.016	175	1.60	2 ÷ 10
TS-HYTEF-275	275	0.08	0.013	193	1.90	2 ÷ 10
TS-HYTEF-300	300	0.07	0.011	210	2.10	2 ÷ 10
TS-HYTEF-315	315	0.062	0.01	221	2.10	2 ÷ 10
TS-HYTEF-325	325	0.059	0.01	228	2.20	2 ÷ 10
TS-HYTEF-350	350	0.056	0.008	245	2.50	2 ÷ 10
TS-HYTEF-375	375	0.05	0.007	263	2.90	2 ÷ 10
TS-HYTEF-400	400	0.047	0.006	280	3.10	2 ÷ 10
TS-HYTEF-450	450	0.045	0.005	360	3.60	2 ÷ 10
TS-HYTEF-500	500	0.043	0.004	400	4.10	2 ÷ 10
TS-HYTEF-600	600	0.039	0.003	480	5.10	2 ÷ 10
TS-HYTEF-700	700	0.031	0.002	560	6.00	2 ÷ 10
TS-HYTEF-800	800	0.022	0.002	640	6.90	2 ÷ 10
TS-HYTEF-900	900	0.016	0.001	720	7.80	2 ÷ 10

Code example for EL version: TS-HYTEFEL-050

# INDUSTRIAL HOSES - ducting and ventilation

## Chemical resistant hoses



### GRIPFLEX SILTEF

**Material:** PTFE film  
**Cover:** Silicone impregnated fibreglass fabric  
**Reinforcement:** External steel wire helix + steel wear strip  
**Working temp.:** From -70°C up to +250°C

Flexible hose designed to remove chemically aggressive fumes, exhaust fumes and gases. Flame retardant, resistant to weather conditions. Widely used in chemical and food industry. A version with the internal layer of white PTFE film compliant with FDA. A version with stainless steel wire helix is also available (from 80 mm diameter) EL version - electrically conductive ( $R < 10^4 \Omega$ ), black PTFE film.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TS-SILTEF-050	50	0.9	0.44	30	0.50	2 ÷ 10
TS-SILTEF-060	60	0.78	0.306	36	0.60	2 ÷ 10
TS-SILTEF-065	65	0.68	0.261	39	0.70	2 ÷ 10
TS-SILTEF-070	70	0.67	0.225	42	0.70	2 ÷ 10
TS-SILTEF-075	75	0.62	0.196	45	0.80	2 ÷ 10
TS-SILTEF-080	80	0.61	0.172	48	0.80	2 ÷ 10
TS-SILTEF-090	90	0.56	0.136	54	0.90	2 ÷ 10
TS-SILTEF-100	100	0.51	0.11	60	1.00	2 ÷ 10
TS-SILTEF-110	110	0.48	0.092	66	1.10	2 ÷ 10
TS-SILTEF-120	120	0.36	0.077	72	1.10	2 ÷ 10
TS-SILTEF-125	125	0.33	0.071	75	1.20	2 ÷ 10
TS-SILTEF-130	130	0.28	0.065	78	1.20	2 ÷ 10
TS-SILTEF-140	140	0.25	0.057	84	1.30	2 ÷ 10
TS-SILTEF-150	150	0.22	0.049	90	1.30	2 ÷ 10
TS-SILTEF-160	160	0.21	0.043	96	1.30	2 ÷ 10
TS-SILTEF-170	170	0.19	0.039	102	1.40	2 ÷ 10
TS-SILTEF-175	175	0.185	0.037	105	1.40	2 ÷ 10
TS-SILTEF-180	180	0.172	0.035	108	1.40	2 ÷ 10
TS-SILTEF-200	200	0.148	0.028	120	1.60	2 ÷ 10
TS-SILTEF-215	215	0.128	0.025	129	1.80	2 ÷ 10
TS-SILTEF-225	225	0.115	0.022	135	2.00	2 ÷ 10
TS-SILTEF-250	250	0.1	0.018	175	2.10	2 ÷ 10
TS-SILTEF-275	275	0.08	0.015	193	2.30	2 ÷ 10
TS-SILTEF-300	300	0.07	0.013	210	2.40	2 ÷ 10
TS-SILTEF-315	315	0.062	0.011	221	2.60	2 ÷ 10
TS-SILTEF-325	325	0.059	0.011	228	2.80	2 ÷ 10
TS-SILTEF-350	350	0.056	0.009	245	3.30	2 ÷ 10
TS-SILTEF-375	375	0.05	0.008	263	3.50	2 ÷ 10
TS-SILTEF-400	400	0.047	0.007	280	3.80	2 ÷ 10
TS-SILTEF-450	450	0.045	0.006	360	4.20	2 ÷ 10
TS-SILTEF-500	500	0.043	0.005	400	4.70	2 ÷ 10
TS-SILTEF-600	600	0.039	0.003	480	5.90	2 ÷ 10
TS-SILTEF-700	700	0.031	0.002	560	6.90	2 ÷ 10
TS-SILTEF-800	800	0.022	0.002	640	7.60	2 ÷ 10
TS-SILTEF-900	900	0.016	0.001	720	8.20	2 ÷ 10

Code example for EL version: TS-SILTEFEL-050

# INDUSTRIAL HOSES - ducting and ventilation

## Chemical resistant hoses



### PTFE CL

**Material:** Brown, PTFE-coated fibreglass fabric  
**Wall thickness:** 0.12 mm (0.15 mm for EL version)  
**Reinforcement:** Steel wire helix, steel wear strip  
**Working temp.:** From -150°C up to +250°C

Lightweight, very flexible hose designed to transfer chemically aggressive fumes and gases. A version with stainless steel wire helix is also available. Other diameters available in the range of 50 ÷ 508 mm.  
 EL version - electrically conductive ( $R < 10^6 \Omega$ ), colour: black.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-PTFE-CL-050	50	0.85	0.32	30	0.40	3 or 6
SC-PTFE-CL-060	60	0.68	0.22	36	0.50	3 or 6
SC-PTFE-CL-076	76	0.47	0.14	45	0.60	3 or 6
SC-PTFE-CL-080	80	0.43	0.12	48	0.63	3 or 6
SC-PTFE-CL-102	102	0.3	0.08	60	0.65	3 or 6
SC-PTFE-CL-110	110	0.25	0.07	66	0.70	3 or 6
SC-PTFE-CL-120	120	0.22	0.06	72	0.72	3 or 6
SC-PTFE-CL-127	127	0.21	0.05	76	0.80	3 or 6
SC-PTFE-CL-152	152	0.16	0.04	90	0.90	3 or 6
SC-PTFE-CL-160	160	0.14	0.03	96	0.94	3 or 6
SC-PTFE-CL-180	180	0.12	0.02	108	1.05	3 or 6
SC-PTFE-CL-203	203	0.1	0.02	120	1.21	3 or 6
SC-PTFE-CL-254	254	0.07	0.01	175	1.70	3 or 6
SC-PTFE-CL-305	305	0.05	0.01	210	2.13	3 or 6
SC-PTFE-CL-350	350	0.04	0.01	245	2.30	3 or 6
SC-PTFE-CL-406	406	0.03	0.01	280	2.90	3 or 6
SC-PTFE-CL-508	508	0.02	0.01	400	3.90	3 or 6

# INDUSTRIAL HOSES - ducting and ventilation

## Chemical resistant hoses



### P 2 SP

**Material:** Black TPE-coated polyester fabric  
**Wall thickness:** 0.4 mm  
**Reinforcement:** Steel wire helix  
**Working temp.:** From -40°C up to +150°C

Lightweight, very flexible hose designed to transfer fumes of acids and solvents at high temperatures. Resistant to UV and ozone. Other diameters available in the range of 13 ÷ 800 mm.  
 SE version - flame retardant, compliant with DIN 4102 B1.

code	I.D. [mm]	wire [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-P2SP-020	20	1	0.45	0.25	20	0.08	10
SC-P2SP-025	25	1	0.45	0.2	25	0.09	10
SC-P2SP-030	30	1	0.4	0.2	30	0.14	10
SC-P2SP-040	40	1	0.35	0.15	40	0.16	10
SC-P2SP-050	50	1.2	0.35	0.1	50	0.21	10
SC-P2SP-060	60	1.2	0.35	0.08	60	0.25	10
SC-P2SP-070	70	1.2	0.3	0.08	70	0.29	10
SC-P2SP-075	75	1.2	0.2	0.07	75	0.31	10
SC-P2SP-080	80	1.2	0.2	0.06	80	0.33	10
SC-P2SP-090	90	1.2	0.2	0.06	90	0.38	10
SC-P2SP-100	100	1.6	0.15	0.05	100	0.56	10
SC-P2SP-120	120	1.6	0.15	0.04	120	0.57	10
SC-P2SP-125	125	1.6	0.13	0.04	125	0.70	10
SC-P2SP-140	140	1.6	0.12	0.04	125	0.73	10
SC-P2SP-150	150	1.6	0.11	0.04	150	0.68	10
SC-P2SP-175	175	1.6	0.09	0.03	175	0.82	10
SC-P2SP-200	200	2	0.08	0.02	200	1.28	10
SC-P2SP-225	225	2	0.07	0.02	225	1.44	10
SC-P2SP-250	250	2	0.07	0.02	250	1.60	10
SC-P2SP-275	275	2	0.06	0.02	275	1.22	10
SC-P2SP-300	300	2	0.05	0.01	300	1.33	10
SC-P2SP-325	325	2	0.05	0.01	325	1.44	10
SC-P2SP-350	350	2	0.04	0.01	350	1.55	10
SC-P2SP-400	400	2	0.04	0.01	400	1.77	10
SC-P2SP-450	450	2	0.03	0.01	450	1.99	10
SC-P2SP-500	500	2	0.03	0.01	500	2.21	10

Code example for SE version: SC-P2SPSE-020

# INDUSTRIAL HOSES - ducting and ventilation

## Chemical resistant hoses



### P 2 HL

**Material:** Black PVC-coated polyester fabric  
**Wall thickness:** 0.4 mm  
**Reinforcement:** Steel wire helix  
**Working temp.:** From -40°C up to +80°C

Lightweight, very flexible hose designed to transfer solvent fumes and dust in explosion-endangered areas. Used for vacuum transport of light granules. Antistatic -  $R < 10^8 \Omega$  according to TRBS 2153. Other diameters available in the range of 19 ÷ 800 mm.

code	I.D. [mm]	wire [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-P2HL-020	20	1.2	2.1	0.35	20	0.10	10
SC-P2HL-025	25	1.2	2	0.35	25	0.12	10
SC-P2HL-030	30	1.2	1.8	0.32	30	0.13	10
SC-P2HL-040	40	1.2	1.5	0.3	40	0.19	10
SC-P2HL-050	50	1.2	1.2	0.25	50	0.24	10
SC-P2HL-060	60	1.2	1	0.20	60	0.29	10
SC-P2HL-070	70	1.2	0.9	0.18	70	0.34	10
SC-P2HL-075	75	1.2	0.85	0.12	75	0.36	10
SC-P2HL-080	80	1.2	0.8	0.10	80	0.38	10
SC-P2HL-090	90	1.2	0.7	0.08	90	0.43	10
SC-P2HL-100	100	1.6	0.6	0.08	100	0.51	10
SC-P2HL-110	110	1.6	0.5	0.07	110	0.56	10
SC-P2HL-120	120	1.6	0.5	0.07	120	0.62	10
SC-P2HL-125	125	1.6	0.5	0.07	125	0.64	10
SC-P2HL-130	130	1.6	0.4	0.06	130	0.66	10
SC-P2HL-140	140	1.6	0.4	0.06	140	0.70	10
SC-P2HL-150	150	1.6	0.3	0.06	150	0.77	10
SC-P2HL-160	160	1.6	0.25	0.05	160	0.80	10
SC-P2HL-170	170	1.6	0.25	0.05	170	0.86	10
SC-P2HL-175	175	1.6	0.25	0.05	175	0.89	10
SC-P2HL-180	180	1.6	0.2	0.04	180	0.96	10
SC-P2HL-200	200	2	0.2	0.04	200	1.07	10
SC-P2HL-250	250	2	0.15	0.03	250	1.33	10
SC-P2HL-300	300	2	0.1	0.02	300	1.60	10
SC-P2HL-320	320	2	0.06	0.02	320	1.72	10
SC-P2HL-350	350	2	0.06	0.02	350	1.87	10
SC-P2HL-400	400	2	0.04	0.01	400	2.13	10
SC-P2HL-450	450	2	0.04	0.01	450	2.40	10
SC-P2HL-500	500	2	0.03	0.01	500	2.67	10

# INDUSTRIAL HOSES - ducting and ventilation

## Special hoses

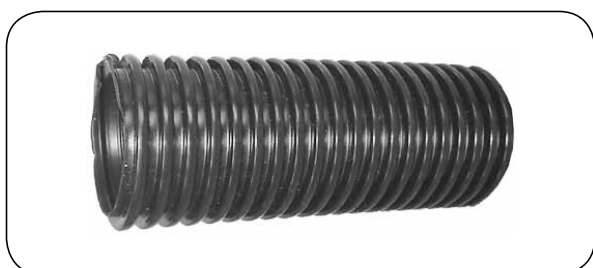


### P-G-EX 1

**Material:** Black TPE-coated polyester fabric  
**Reinforcement:** Nylon helix, wear strip profile for abrasion resistance  
**Working temp.:** From -40°C up to +150°C (with peaks up to +170°C)

Lightweight, flexible hose designed to transfer exhaust fumes of petrol and diesel engines at high temperatures. Crush recoverable and suitable for hose reel systems. Other diameters available in the range of 35 ÷ 200 mm.

code	I.D. [mm]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-PGEX1-040	40	0.65	80	0.25	5 - 7.5 - 10 - 15 - 20
SC-PGEX1-050	50	0.5	85	0.41	5 - 7.5 - 10 - 15 - 20
SC-PGEX1-065	65	0.35	100	0.53	5 - 7.5 - 10 - 15 - 20
SC-PGEX1-075	75	0.15	105	0.69	5 - 7.5 - 10 - 15 - 20
SC-PGEX1-090	90	0.12	175	0.83	5 - 7.5 - 10 - 15 - 20
SC-PGEX1-100	100	0.1	190	0.87	5 - 7.5 - 10 - 15 - 20
SC-PGEX1-125	125	0.08	250	1.20	5 - 7.5 - 10 - 15 - 20
SC-PGEX1-150	150	0.06	300	1.44	5 - 7.5 - 10 - 15 - 20
SC-PGEX1-200	200	0.04	400	1.83	5 - 7.5 - 10 - 15 - 20



### FLEXOCOND

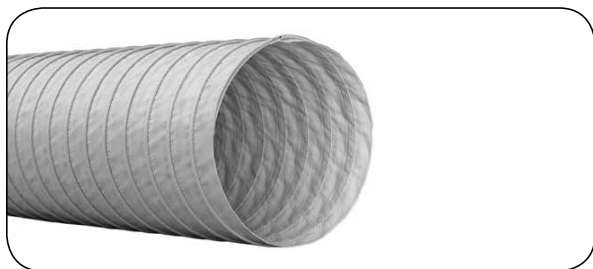
**Material:** Black, conductive elastomer PE  
**Working temp.:** From -20°C up to +60°C

Very lightweight, very flexible, crush recoverable hose designed to remove dust, polluted air, smoke, yarn and other lightweight products. Widely used for industrial vacuum cleaners. The hose is conductive ( $R < 10^4 \Omega$ ), and thus prevents static buildup but only if properly and effectively grounded.

code	I.D. [mm]	O.D. [mm]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
ME-FLEXOCOND-25	25	32.4	0.78	38	0.16	30
ME-FLEXOCOND-32	32	40.4	0.78	63	0.21	30
ME-FLEXOCOND-38	38	48	0.69	70	0.30	30
ME-FLEXOCOND-50	50	60.5	0.59	80	0.40	30
ME-FLEXOCOND-76	76	87.5	0.39	200	0.75	15

# INDUSTRIAL HOSES - ducting and ventilation

## Special hoses



### P 2 A 1000

**Material:** Grey, PVC-coated polyester fabric  
**Wall thickness:** 0.4 mm  
**Reinforcement:** Steel wire helix  
**Working temp.:** From -30°C up to +80°C  
 (with peaks up to +100°C)

Lightweight, very flexible, self-extinguishing hose designed to remove welding fumes and for air-conditioning installations. Other diameters available in the range of 25 ÷ 800 mm.

code	I.D. [mm]	wire [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SC-P2A1000-030	30	1	0.9	0.25	21	0.10	10
SC-P2A1000-040	40	1	0.9	0.20	28	0.11	10
SC-P2A1000-050	50	1	0.8	0.20	35	0.13	10
SC-P2A1000-060	60	1	0.8	0.16	42	0.16	10
SC-P2A1000-070	70	1	0.7	0.14	49	0.20	10
SC-P2A1000-075	75	1	0.6	0.10	53	0.22	10
SC-P2A1000-080	80	1	0.6	0.10	56	0.24	10
SC-P2A1000-090	90	1	0.5	0.09	63	0.27	10
SC-P2A1000-100	100	1.2	0.5	0.09	70	0.30	10
SC-P2A1000-120	120	1.2	0.5	0.08	85	0.35	10
SC-P2A1000-125	125	1.2	0.5	0.08	88	0.38	10
SC-P2A1000-140	140	1.2	0.35	0.06	95	0.42	10
SC-P2A1000-150	150	1.2	0.2	0.06	105	0.45	10
SC-P2A1000-175	175	2	0.2	0.05	123	0.63	10
SC-P2A1000-200	200	2	0.2	0.05	140	0.72	10
SC-P2A1000-250	250	2	0.1	0.04	175	0.90	10
SC-P2A1000-300	300	2	0.06	0.03	210	1.08	10
SC-P2A1000-350	350	2	0.05	0.02	245	1.26	10
SC-P2A1000-400	400	2	0.04	0.02	280	1.45	10
SC-P2A1000-450	450	2	0.03	0.01	315	1.63	10
SC-P2A1000-500	500	2	0.02	0.01	350	1.82	10

Other colours are also available.

Code examples:

SC-P2A1000-030BK	- black
SC-P2A1000-030Y	- yellow
SC-P2A1000-030BL	- blue
SC-P2A1000-030W	- white

## INDUSTRIAL HOSES - ducting and ventilation

### Special hoses



### OREGON

**Material:** Grey PVC

**Reinforcement:** PVC helix

**Working temp.:** From -10°C up to +60°C

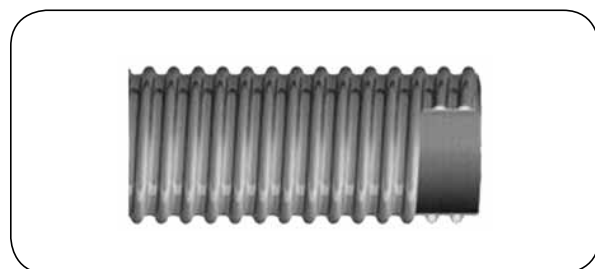
Lightweight, flexible, smooth bore hose designed for extraction of dust, yarns, polluted air, fumes, etc. Self-extinguishing according to UL 94 V2.

code	I.D. [mm]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
ME-OREGON-020	20	0.5	20	0.15	50
ME-OREGON-025	25	0.5	25	0.19	50
ME-OREGON-030	30	0.5	30	0.23	50
ME-OREGON-032	32	0.5	32	0.24	50
ME-OREGON-035	35	0.5	35	0.28	50
ME-OREGON-038	38	0.5	38	0.31	50
ME-OREGON-040	40	0.4	40	0.33	50
ME-OREGON-045	45	0.4	45	0.37	50
ME-OREGON-050	50	0.4	50	0.44	50
ME-OREGON-060	60	0.4	60	0.56	50
ME-OREGON-063	63	0.4	63	0.60	50
ME-OREGON-070	70	0.4	70	0.66	50
ME-OREGON-075	75	0.4	75	0.75	50
ME-OREGON-080	80	0.4	80	0.79	30
ME-OREGON-090	90	0.4	90	0.90	30
ME-OREGON-100	100	0.4	100	1.01	30
ME-OREGON-110	110	0.4	110	1.15	30
ME-OREGON-120	120	0.4	120	1.30	30
ME-OREGON-125	125	0.4	125	1.36	30
ME-OREGON-130	130	0.4	130	1.44	30
ME-OREGON-140	140	0.4	140	1.60	30
ME-OREGON-150	150	0.4	150	1.76	30
ME-OREGON-160	160	0.4	160	1.93	20
ME-OREGON-180	180	0.4	180	2.30	20
ME-OREGON-200	200	0.4	200	2.65	20
ME-OREGON-250	250	0.4	250	3.60	15
ME-OREGON-300	300	0.4	300	4.50	10



# INDUSTRIAL HOSES - ducting and ventilation

## Special hoses



### LIGHTFLEX

**Material:** Grey, soft PVC  
**Reinforcement:** Hard PVC helix  
**Working temp.:** From -15°C up to +50°C

Lightweight, flexible, smooth bore hose designed to extract dust, smoke, yarns, polluted air, etc. Suitable for condensation draining in air-conditioning systems as well as protection of assemblies and cables. Self-extinguishing according to UL 94 V2.

code	I.D. [mm]	O.D. [mm]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
FT-LIGHTFLEX-019	19	23.8	0.3	19	0.11	50
FT-LIGHTFLEX-025	25	30	0.3	25	0.14	50
FT-LIGHTFLEX-030	30	35.4	0.3	30	0.20	50
FT-LIGHTFLEX-032	32	37.4	0.3	32	0.22	50
FT-LIGHTFLEX-035	35	40.6	0.3	35	0.24	50
FT-LIGHTFLEX-038	38	44.2	0.3	38	0.27	50
FT-LIGHTFLEX-040	40	46.4	0.3	40	0.28	50
FT-LIGHTFLEX-050	50	57	0.3	50	0.45	50
FT-LIGHTFLEX-060	60	67.6	0.2	60	0.54	50
FT-LIGHTFLEX-063	63	70.8	0.2	63	0.57	50
FT-LIGHTFLEX-070	70	78.2	0.2	70	0.64	50
FT-LIGHTFLEX-076	76	84.4	0.2	76	0.69	50
FT-LIGHTFLEX-080	80	88.6	0.2	80	0.78	50
FT-LIGHTFLEX-090	90	99.2	0.2	90	0.93	50
FT-LIGHTFLEX-100	100	109.4	0.2	100	0.98	30
FT-LIGHTFLEX-110	110	119.8	0.1	110	1.10	30
FT-LIGHTFLEX-120	120	130	0.1	120	1.20	30
FT-LIGHTFLEX-125	125	135.2	0.1	125	1.25	30
FT-LIGHTFLEX-130	130	140.2	0.1	130	1.40	30
FT-LIGHTFLEX-140	140	150.2	0.1	140	1.50	30
FT-LIGHTFLEX-150	150	161.8	0.1	150	1.70	30

## INDUSTRIAL HOSES - ducting and ventilation

### Special hoses



#### PLS

**Material:** Special PVC-coated polyester fabric  
**Wall thickness:** 0.3 mm  
**Reinforcement:** Steel wire helix  
**Working temp.:** From -20°C up to +100°C

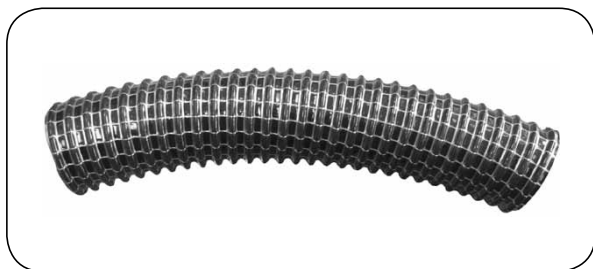
Lightweight, highly flexible, flame retardant hose designed for air-conditioning systems or hot and cold air transfer to tents and buildings. Available as a standard with soft ends (see picture above). On request supplied in different colours or with steel rope end rings that allow connection of the hose for required length with the use of coupling bands.

code*	I.D. [mm]	working pressure [bar]	bending radius [mm]	weight [kg/m]
ND-PLS-0152-...	152	0.64	152	1.10
ND-PLS-0180-...	180	0.6	180	1.16
ND-PLS-0203-...	203	0.55	203	1.20
ND-PLS-0229-...	229	0.5	229	1.28
ND-PLS-0254-...	254	0.45	254	1.35
ND-PLS-0305-...	305	0.35	305	1.44
ND-PLS-0357-...	357	0.3	357	1.83
ND-PLS-0408-...	408	0.25	408	2.05
ND-PLS-0425-...	425	0.24	425	2.76
ND-PLS-0457-...	457	0.23	457	2.97
ND-PLS-0508-...	508	0.2	508	3.30
ND-PLS-0525-...	525	0.19	525	3.94
ND-PLS-0560-...	560	0.18	560	4.20
ND-PLS-0600-...	600	0.17	600	4.50
ND-PLS-0700-...	700	0.15	700	5.60
ND-PLS-0800-...	800	0.13	800	6.80
ND-PLS-0900-...	900	0.11	900	8.40
ND-PLS-1000-...	1000	0.1	1000	10.00

\* - Code example of PLS Ø 152 mm, length 2.5 m: ND-PLS-0152-025

# INDUSTRIAL HOSES - ducting and ventilation

## Special hoses

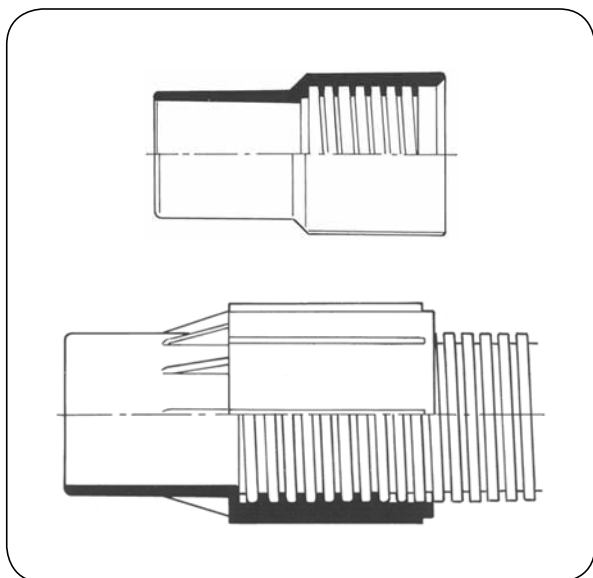


### SUPERELASTIC

**Material:** Two layers of soft PVC  
with polyester yarn reinforcement  
**Reinforcement:** PVC-coated steel wire helix  
**Working temp.:** From 0°C up to +85°C

Lightweight, highly flexible hose designed for extraction of dust, yarns, polluted air, fumes, etc. Widely used for domestic and industrial vacuum cleaners or as a protection hose.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
PA-SUPERELASTIC-25	25	1.7	0.4	25	0.19	15
PA-SUPERELASTIC-32	32	1.5	0.35	32	0.26	15
PA-SUPERELASTIC-38	38	1.4	0.3	38	0.32	15
PA-SUPERELASTIC-41	41	1.4	0.3	41	0.35	15
PA-SUPERELASTIC-44	44	1.3	0.28	44	0.36	15
PA-SUPERELASTIC-51	51	1.3	0.28	51	0.43	15
PA-SUPERELASTIC-63	63	1	0.25	63	0.51	15
PA-SUPERELASTIC-70	70	0.9	0.2	70	0.58	15
PA-SUPERELASTIC-76	76	0.8	0.18	76	0.66	15



### Fittings for SUPERELASTIC hose

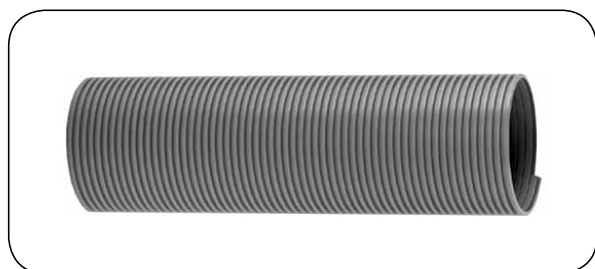
Fittings made of soft plastic designed to thread on to SUPERELASTIC hose.

code	fitting I.D. [mm]	fitting O.D. [mm]
PA-SUPERELASTIC-32K	32	38
PA-SUPERELASTIC-38K	38	45
PA-SUPERELASTIC-51K	50	58



# INDUSTRIAL HOSES - ducting and ventilation

## Special hoses



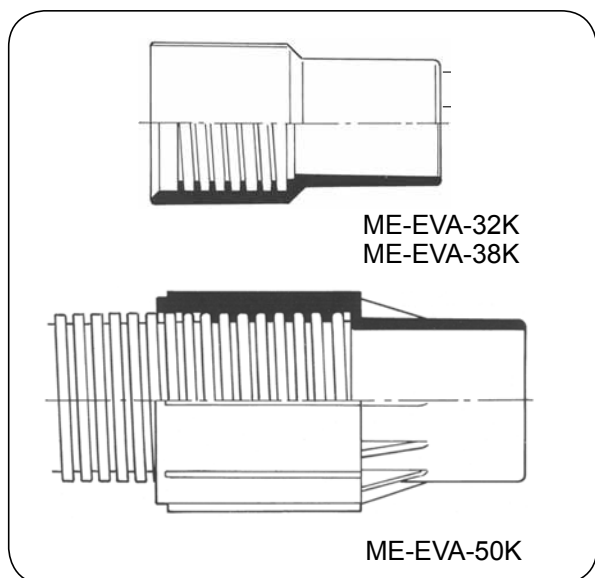
### EVA

**Material:** Ethyl-vinyl acetate

**Working temp.:** From -30°C up to +60°C

Lightweight, very flexible, crushproof and kink-resistant hose designed to extract dust, polluted air and welding fumes. Widely used in industrial vacuum cleaners.

code	I.D. [mm]	O.D. [mm]	vacuum [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
ME-EVA-25	25	33	0.5	66	0.20	30
ME-EVA-29	29	36	0.5	76	0.22	30
ME-EVA-32	32	41	0.5	82	0.27	30
ME-EVA-38	38	48	0.5	93	0.36	30
ME-EVA-45	45	55	0.5	111	0.47	30
ME-EVA-50	50	61	0.5	122	0.56	30
ME-EVA-60	60	72	0.4	146	0.70	30
ME-EVA-75	75	88	0.4	155	0.92	15
ME-EVA-80	80	94	0.4	170	1.00	15



### Fittings for EVA hose

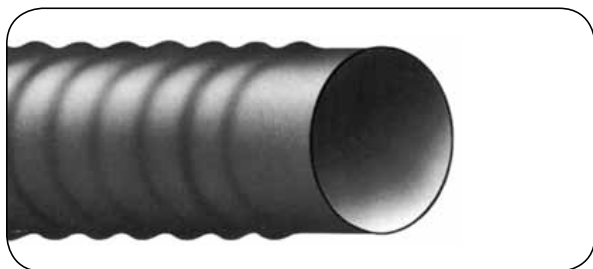
Fittings made of soft plastic designed to thread on to EVA hose.

code	fitting I.D. [mm]	fitting O.D. [mm]
ME-EVA-32K	32	38
ME-EVA-38K	38	45
ME-EVA-50K	50	58



# INDUSTRIAL HOSES - ducting and ventilation

## Special hoses



### KEHRFLEX

**Internal layer:** Corrugated NR rubber  
**Reinforcement:** Steel wire helix  
**External layer:** Corrugated NR/SBR compound  
**Working temp.:** From -30°C up to +70°C

Very lightweight, flexible suction hose designed for road-sweeping and street cleaning machines. Resistant to abrasion, weather conditions and ageing. Delivered with wire-free cuffs at each end (without wire helix).

code	I.D. [mm]	length [mm]	working pressure [bar]	bursting pressure [bar]	vacuum [bar]
BG-KEHRFLEX-203-0750	203	750	1	3	0.3
BG-KEHRFLEX-203-0800	203	800	1	3	0.3
BG-KEHRFLEX-203-1000	203	1000	1	3	0.3
BG-KEHRFLEX-203-1120	203	1120	1	3	0.3
BG-KEHRFLEX-203-1200	203	1200	1	3	0.3
BG-KEHRFLEX-203-1250	203	1250	1	3	0.3
BG-KEHRFLEX-203-2000	203	2000	1	3	0.3
BG-KEHRFLEX-203-2500	203	2500	1	3	0.3
BG-KEHRFLEX-203-3000	203	3000	1	3	0.3
BG-KEHRFLEX-203-3600	203	3600	1	3	0.3
BG-KEHRFLEX-203-3650	203	3650	1	3	0.3
BG-KEHRFLEX-203-4000	203	4000	1	3	0.3
BG-KEHRFLEX-254-1000	254	1000	1	3	0.3
BG-KEHRFLEX-254-1050	254	1050	1	3	0.3
BG-KEHRFLEX-254-1150	254	1150	1	3	0.3
BG-KEHRFLEX-254-1200	254	1200	1	3	0.3
BG-KEHRFLEX-254-1250	254	1250	1	3	0.3
BG-KEHRFLEX-254-1450	254	1450	1	3	0.3
BG-KEHRFLEX-254-1500	254	1500	1	3	0.3
BG-KEHRFLEX-254-1600	254	1600	1	3	0.3
BG-KEHRFLEX-254-1650	254	1650	1	3	0.3
BG-KEHRFLEX-254-1750	254	1750	1	3	0.3



### VACULIFT

**Material:** Neoprene-coated polyester fabric  
**Reinforcement:** Steel wire helix  
**External layer:** Orange protective tape  
**Working temp.:** From -25°C up to +125°C

Lightweight, very flexible hose designed for safe and easy vacuum lifting of several types of loads such as: barrels, bags, packages. Suitable for laying kerbs, slabs, stone plates. Maximum length when unfolded: 4 m. Diameters available in the range of 60 mm to 305 mm. Selecting a hose requires defining the maximum weight of lifted loads - contact Sales Department of TUBES INTERNATIONAL®.

# INDUSTRIAL HOSES - ducting and ventilation

## Connectors for ducting hoses

System of connectors designed to assemble ducting hoses easily and effectively using BC type worm drive bridge clamps (see chapter: HOSE CONNECTORS). A variety of shapes of the connectors allows for construction of a new installation or modernization of the old one. The connectors are made of zinc-plated steel sheet, 0.5 mm thick as a standard (aluminium and stainless steel version as an option). Custom made connectors are also available.

Straight connector



**KN**

code	DN	O.D. [mm]
KS-KN-080-OC	80	77
KS-KN-100-OC	100	97
KS-KN-125-OC	125	122
KS-KN-140-OC	140	137
KS-KN-150-OC	150	147
KS-KN-160-OC	160	157
KS-KN-180-OC	180	177
KS-KN-200-OC	200	197
KS-KN-225-OC	225	222
KS-KN-250-OC	250	247
KS-KN-280-OC	280	277
KS-KN-300-OC	300	297
KS-KN-400-OC	400	397
KS-KN-500-OC	500	497

90° elbow (R = 1.5 x d)



**KSBB 90**

code	DN	O.D. [mm]
KS-KSBB90-080-OC	80	77
KS-KSBB90-100-OC	100	97
KS-KSBB90-125-OC	125	122
KS-KSBB90-140-OC	140	137
KS-KSBB90-150-OC	150	147
KS-KSBB90-160-OC	160	157
KS-KSBB90-180-OC	180	177
KS-KSBB90-200-OC	200	197
KS-KSBB90-225-OC	225	222
KS-KSBB90-250-OC	250	247
KS-KSBB90-280-OC	280	277
KS-KSBB90-300-OC	300	297
KS-KSBB90-400-OC	400	397
KS-KSBB90-500-OC	500	497

Reduction symmetric connector



**KRS**

code	DN	O.D. [mm]
KS-KRS-100-080-OC	100/80	97/77
KS-KRS-125-100-OC	125/100	122/97
KS-KRS-150-100-OC	150/100	147/97
KS-KRS-150-125-OC	150/125	147/122
KS-KRS-180-150-OC	180/150	177/147
KS-KRS-200-150-OC	200/150	197/147
KS-KRS-200-180-OC	200/180	197/177
KS-KRS-225-200-OC	225/180	222/177
KS-KRS-250-200-OC	250/200	247/197
KS-KRS-250-225-OC	250/225	247/222
KS-KRS-280-250-OC	280/250	277/247
KS-KRS-300-250-OC	300/250	297/247
KS-KRS-300-280-OC	300/280	297/277
KS-KRS-400-300-OC	400/300	397/297
KS-KRS-500-400-OC	500/400	497/397

Reduction asymmetric connector



**KRA**

code	DN	O.D. [mm]
KS-KRA-100-080-OC	100/80	97/77
KS-KRA-125-100-OC	125/100	122/97
KS-KRA-150-100-OC	150/100	147/97
KS-KRA-150-125-OC	150/125	147/122
KS-KRA-180-150-OC	180/150	177/147
KS-KRA-200-150-OC	200/150	197/147
KS-KRA-200-180-OC	200/180	197/177
KS-KRA-225-200-OC	225/180	222/177
KS-KRA-250-200-OC	250/200	247/197
KS-KRA-250-225-OC	250/225	247/222
KS-KRA-280-250-OC	280/250	277/247
KS-KRA-300-250-OC	300/250	297/247
KS-KRA-300-280-OC	300/280	297/277
KS-KRA-400-300-OC	400/300	397/297
KS-KRA-500-400-OC	500/400	497/397

# INDUSTRIAL HOSES - ducting and ventilation

## Connectors for ducting hoses

45° elbow (R = 1.5 x d)



**KSBB 45**

code	DN	O.D. [mm]
KS-KSBB45-080-OC	80	77
KS-KSBB45-100-OC	100	97
KS-KSBB45-125-OC	125	122
KS-KSBB45-140-OC	140	137
KS-KSBB45-150-OC	150	147
KS-KSBB45-160-OC	160	157
KS-KSBB45-180-OC	180	177
KS-KSBB45-200-OC	200	197
KS-KSBB45-225-OC	225	222
KS-KSBB45-250-OC	250	247
KS-KSBB45-280-OC	280	277
KS-KSBB45-300-OC	300	297
KS-KSBB45-400-OC	400	397
KS-KSBB45-500-OC	500	497

Symmetric tee (Y shape)



**KTSBY**

code	DN	O.D. [mm]
KS-KTSBY-100-OC	100	97
KS-KTSBY-125-OC	125	122
KS-KTSBY-140-OC	140	137
KS-KTSBY-150-OC	150	147
KS-KTSBY-160-OC	160	157
KS-KTSBY-180-OC	180	177
KS-KTSBY-200-OC	200	197
KS-KTSBY-225-OC	225	222
KS-KTSBY-250-OC	250	247
KS-KTSBY-280-OC	280	277
KS-KTSBY-300-OC	300	297
KS-KTSBY-400-OC	400	397
KS-KTSBY-500-OC	500	497

90° symmetric tee



**KTSB 90**

code	DN	O.D. [mm]
KS-KTSB90-080-OC	80	77
KS-KTSB90-100-OC	100	97
KS-KTSB90-125-OC	125	122
KS-KTSB90-140-OC	140	137
KS-KTSB90-150-OC	150	147
KS-KTSB90-160-OC	160	157
KS-KTSB90-180-OC	180	177
KS-KTSB90-200-OC	200	197
KS-KTSB90-225-OC	225	222
KS-KTSB90-250-OC	250	247
KS-KTSB90-280-OC	280	277
KS-KTSB90-300-OC	300	297
KS-KTSB90-400-OC	400	397
KS-KTSB90-500-OC	500	497

45° symmetric tee



**KTSB 45**

code	DN	O.D. [mm]
KS-KTSB45-080-OC	80	77
KS-KTSB45-100-OC	100	97
KS-KTSB45-125-OC	125	122
KS-KTSB45-140-OC	140	137
KS-KTSB45-150-OC	150	147
KS-KTSB45-160-OC	160	157
KS-KTSB45-180-OC	180	177
KS-KTSB45-200-OC	200	197
KS-KTSB45-225-OC	225	222
KS-KTSB45-250-OC	250	247
KS-KTSB45-280-OC	280	277
KS-KTSB45-300-OC	300	297
KS-KTSB45-400-OC	400	397
KS-KTSB45-500-OC	500	497

# INDUSTRIAL HOSES - composite

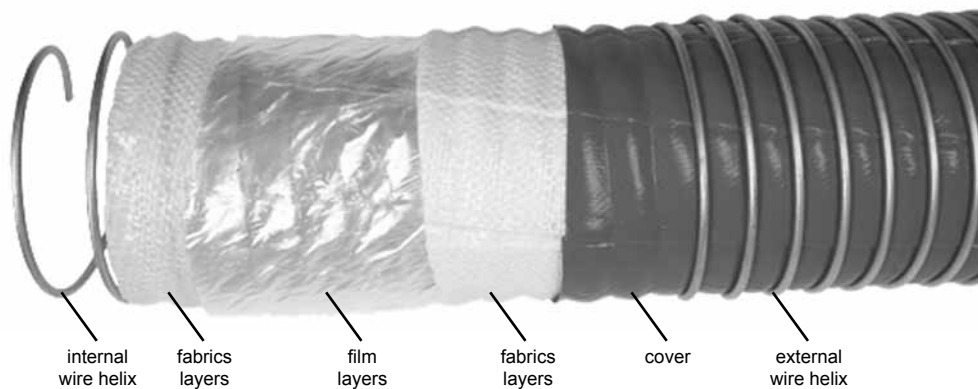
## Characteristics

Composite hoses are very lightweight and very flexible, they feature unique, multi-layer construction. The unique hose design includes several fabric and film layers made of various materials and as strips helically wound between two steel wire helices: internal and external. Depending on foil and fabric material (polypropylene, polyamide, ECTFE, polyester, glass fibre or aramid fibre) and wire helix (zinc-plated steel, stainless steel, aluminium, polypropylene-coated steel), the hoses can be used to convey chemicals (also aggressive), petrochemical products, liquid gas, concentrated alcohols etc. They are used in industrial installations, but first of all, for loading and unloading of tank trucks or rail tankers and in marine transport. The hoses are used and supplied as complete hose assemblies, pressure tested, with various fittings. The composite hose assemblies intended for loading/unloading operations are produced according to the requirements of Transportation Technical Supervision and supplied with appropriate quality certificates. The loading composite hose assemblies are frequently mounted on loading and unloading equipment in loading terminals, including marine loading systems.

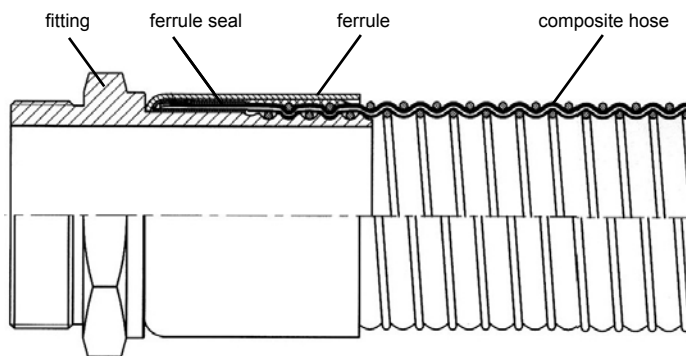
## Construction

The construction of composite hoses is unique and very complex. The internal wire helix provides resistance to vacuum. For sealing and reinforcement, the hose is covered with layers of fabric and film, which are made of various materials depending on a hose version. The proper selection of these materials ensures resistance to chemicals, temperature and pressure. The external wire helix binds the layers tightly together and protects the hose against abrasion and mechanical damage. The material of the wire which makes external and internal helices is chosen according to the application.

## Hose construction



## Hose assembly construction



Due to their unique construction and complex assembly technology, the composite hoses are supplied as complete hose assemblies only.



# INDUSTRIAL HOSES - composite

## Composite hose materials

code marking	material of internal wire helix	material of external wire helix
GG	galvanized steel	galvanized steel
AG	aluminium	galvanized steel
PG	polypropylene-coated steel	galvanized steel
NG	nylon-coated steel	galvanized steel
SG	AISI 316 steel	galvanized steel
PS	polypropylene-coated steel	AISI 316 steel
SS	AISI 316 steel	AISI 316 steel
PP	polypropylene-coated steel	polypropylene-coated steel

material of fabric and film
polypropylene
polyamide
PTFE
ECTFE
polyester
aramid fibre
glass fibre

## Electrical conductivity

Electrical conductivity is obtained by the contact of internal and external wire helix with a fitting (direct, through a ferrule, antistatic wire, conductive rubber seal). According to EN 13765:2010, the electrical resistance between fittings does not exceed 1  $\Omega$ /m (2.5  $\Omega$ /m for DN <50). For hoses transferring liquefied gas it does not exceed 10  $\Omega$  according to EN 13766:2003.

## Initial hose selection

The working pressure of a hose given in the table is its maximum working pressure. Safety factor 4:1 at +20°C temperature (HEAVY DUTY hose type, CRYOGENIC, FUELSTAR and CHEMSTAR hoses: 5:1). The higher the working temperature, the lower the working pressure. Application at the temperature above +60°C requires approval. It is not recommended to use a hose assembly at its minimum and maximum working pressure, temperature or bending radius. The proper and final selection of the hose for the particular application should always be confirmed in writing by Sales or Technical Department of TUBES INTERNATIONAL®.

## Quality

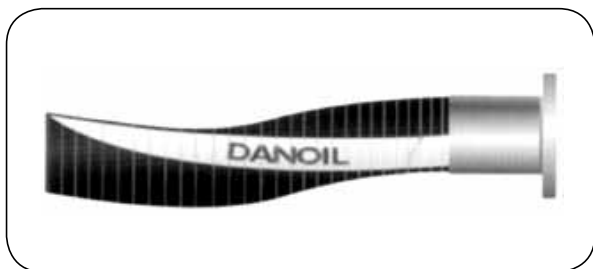
All composite hose assemblies supplied by TUBES INTERNATIONAL® are tested with adequate test pressure and checked for electrical conductivity.

## Repairs

Frequently it is possible to repair a hose assembly by reassembling the fittings. This service should always be done by the hose supplier - TUBES INTERNATIONAL®.



## INDUSTRIAL HOSES - composite



### DANOIL TRANSPORT

**Internal layer:** Polypropylene (film, fabric)  
**Reinforcement:** Internal/external wire helix, fabric layers (polypropylene)  
**Cover:** PVC-coated fabric resistant to abrasion and weather conditions  
**Working temp.:** From -30°C up to +80°C

**Characteristics:** Suction-delivery hose designed for transfer, loading and unloading of petrol, diesel oil, and other petrochemical products (with aromatic content up to 50%) in standard working conditions. Internal and external wire helix is made of zinc-plated steel. Safety factor 4:1.

**Applications:** Loading/unloading systems, loading/unloading equipment, loading and unloading of road and rail tankers, road tanker equipment, industrial installations.

**Standards:** EN 13765:2010+A1:2015 (type 2).

**Available versions:** GG - black, red colour.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	maximum length [m]
DT-DANOILTR-050	50	10.5	0.9	150	1.60	30
DT-DANOILTR-075	75	10.5	0.9	205	2.50	30
DT-DANOILTR-100	100	10.5	0.9	265	3.60	30



### ★★★★★ FUELSTAR

**Internal layer:** Polypropylene (film, fabric)  
**Reinforcement:** Internal/external wire helix, fabric layers (polypropylene)  
**Cover:** Polyester-coated fabric resistant to abrasion and weather conditions  
**Working temp.:** From -30°C up to +80°C

**Characteristics:** Suction-delivery hose designed for transfer, loading and unloading of petrochemical products including: fuel, petrol, diesel oil, lubricating oil, kerosene and other products with aromatic content (up to 100%) in standard working conditions. Internal wire helix and external wire helix are made of zinc-plated steel. Safety factor 5:1.

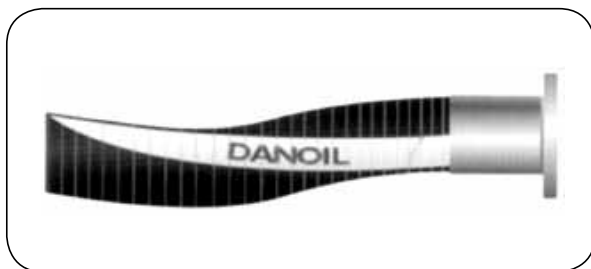
**Applications:** Loading/unloading systems, loading/unloading equipment, loading and unloading of road and rail tankers, road tanker equipment, industrial installations.

**Standards:** EN 13765:2010+A1:2015 (type 2).

**Available versions:** GG - blue colour.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	maximum length [m]
SO-FUELSTAR-050	50	10	0.7	150	1.66	40
SO-FUELSTAR-075	75	10	0.7	250	2.05	40
SO-FUELSTAR-100	100	10	0.7	300	4.10	40

## INDUSTRIAL HOSES - composite



### DANOIL 3

**Internal layer:** Polypropylene (film, fabric)

**Reinforcement:** Internal/external wire helix, fabric layers (polypropylene)

**Cover:** PVC-coated fabric resistant to abrasion and weather conditions

**Working temp.:** From -30°C up to +100°C

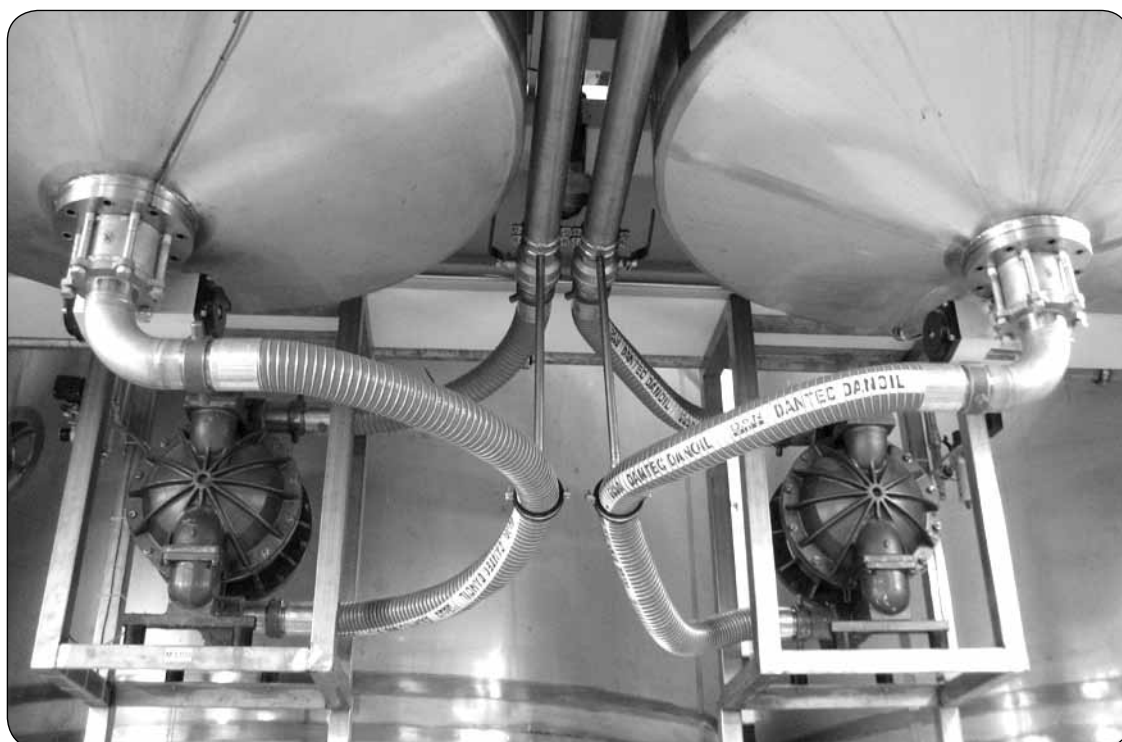
**Characteristics:** Suction-delivery hose designed for transfer, loading and unloading of mineral oils and vegetable oils, petrol, diesel oil and other petrochemical products (with aromatic content up to 50%) in standard working conditions. Safety factor 4:1. AG version (aluminium internal wire helix) and AA version (aluminium internal and external wire helix) are much lighter (about 30%) so they significantly facilitate handling.

**Applications:** Loading/unloading systems, loading/unloading equipment, loading and unloading of road and rail tankers, road tanker equipment, industrial installations.

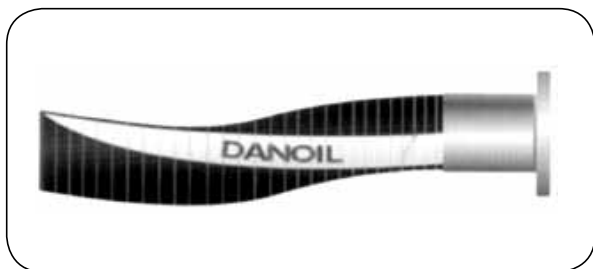
**Standards:** EN 13765:2010+A1:2015 (type 2).

**Available versions:** GG - green colour, AG - orange colour, AA.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	maximum length [m]
GG version						
DT-DANOIL3GG-025	25	10	0.9	100	0.80	25
DT-DANOIL3GG-038	38	10	0.9	125	1.10	25
DT-DANOIL3GG-050	50	10	0.9	150	1.60	30
DT-DANOIL3GG-065	65	10	0.9	180	2.10	25
DT-DANOIL3GG-075	75	10	0.9	205	2.50	30
DT-DANOIL3GG-100	100	10	0.9	265	3.60	30
AG version						
DT-DANOIL3AG-065	65	10.5	0.9	180	1.60	25
DT-DANOIL3AG-075	75	10.5	0.9	205	1.70	30
DT-DANOIL3AG-100	100	10.5	0.9	265	2.40	30



## INDUSTRIAL HOSES - composite



### DANOIL 7

**Internal layer:** Polypropylene (film, fabric)  
**Reinforcement:** Internal/external wire helix, fabric layers (polypropylene)  
**Cover:** PVC-coated fabric resistant to abrasion and weather conditions  
**Working temp.:** From -30°C up to +100°C

**Characteristics:** Suction-delivery hose designed for transfer, loading and unloading of petrol, diesel oil, vegetable oil and other petrochemical products (with aromatic content up to 50%) in heavy duty working conditions. Safety factor 4:1 (HD - Heavy Duty version - 5:1). AG version (aluminium internal wire helix) is much lighter (about 30%) so it significantly facilitates handling.

**Applications:** Loading/unloading systems, loading/unloading equipment, loading and unloading of road and rail tankers, road tanker equipment, industrial installations.

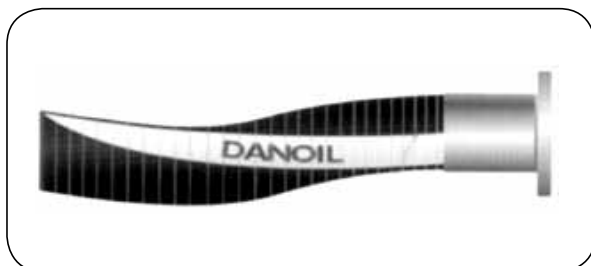
**Standards:** EEN 13765:2010+A1:2015 (type 3), meets the requirements of IMO (International Maritime Organisation) and IBC Code as well as USCR (United States Coastguard Requirements).

**Available versions:** GG, GS, AG - black colour.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	maximum length [m]
GG, GS version						
DT-DANOIL7...-025	25	14	0.9	100	0.80	25
DT-DANOIL7...-038	38	14	0.9	140	1.20	25
DT-DANOIL7...-050	50	14	0.9	180	1.90	30
DT-DANOIL7...-065	65	14	0.9	205	2.50	25
DT-DANOIL7...-075	75	14	0.9	280	3.00	30
DT-DANOIL7...-100	100	14	0.9	395	5.20	30
HEAVY DUTY version						
DT-DANOIL7...HD-100	100	14	0.9	405	6.40	30
DT-DANOIL7...HD-150	150	14	0.9	510	10.70	30
DT-DANOIL7...HD-200	200	14	0.9	760	15.00	30
DT-DANOIL7...HD-250	250	10.5	0.9	915	20.50	30
AG version						
DT-DANOIL7AG-065	65	14	0.9	180	1.60	25
DT-DANOIL7AG-075	75	14	0.9	205	1.70	30
DT-DANOIL7AG-100	100	14	0.9	265	2.40	30



## INDUSTRIAL HOSES - composite



### DANOIL 9

**Internal layer:** Polyamide (film, fabric)  
**Reinforcement:** Internal/external wire helix, fabric layers (polypropylene)  
**Cover:** PVC-coated fabric resistant to abrasion and weather conditions  
**Working temp.:** From -30°C up to +100°C

- Characteristics:** Suction-delivery hose designed for transfer, loading and unloading of petrol, diesel oil and other petrochemical products in heavy duty working conditions. Particularly recommended for fuel with aromatic content over 50%, unleaded petrol and biodiesel, MTBE - methyl tert-butyl ether - fuel additive, jet fuel. Safety factor 4:1 (HD - Heavy Duty version - 5:1). AG version (aluminium internal wire helix) is much lighter (about 30%) so it significantly facilitates handling.
- Applications:** Loading/unloading systems, loading/unloading equipment, loading and unloading of road and rail tankers, road tanker equipment, industrial installations.
- Standards:** EEN 13765:2010+A1:2015 (type 3), meets the requirements of IMO (International Maritime Organisation) and IBC Code as well as USCR (United States Coastguard Requirements).
- Available versions:** GG, GS, SG, SS, AG, AS - blue colour.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	maximum length [m]
GG, GS, SG, SS version						
DT-DANOIL9...-025	25	14	0.9	100	0.80	25
DT-DANOIL9...-038	38	14	0.9	140	1.20	25
DT-DANOIL9...-050	50	14	0.9	180	1.90	30
DT-DANOIL9...-065	65	14	0.9	205	2.50	25
DT-DANOIL9...-075	75	14	0.9	280	3.00	30
DT-DANOIL9...-100	100	14	0.9	395	5.20	30
HEAVY DUTY version						
DT-DANOIL9...HD-100	100	14	0.9	405	6.40	30
DT-DANOIL9...HD-150	150	14	0.9	510	10.70	30
DT-DANOIL9...HD-200	200	14	0.9	760	15.00	30
DT-DANOIL9...HD-250	250	10.5	0.9	915	20.50	30
AG, AS version						
DT-DANOIL9...-065	65	14	0.9	180	1.60	25
DT-DANOIL9...-075	75	14	0.9	205	1.70	30
DT-DANOIL9...-100	100	14	0.9	265	2.40	30

### Selecting composite hose assemblies for biofuels

Due to increasing biofuel consumption it is very important to match the right hose with this application. It is biodiesel in particular which contains esterified vegetable oils that damage elastomers and plastic used in the production of the hoses and seals (nitrile, polypropylene, PVC and other). On the other hand some metals used in the production of fittings and accessories may have negative impact on the properties of fuel conveyed. Brass, bronze, copper, lead, tin and zinc can accelerate the process of fuel oxidation and combined with fuel components, create insoluble sediments or gels. For these reasons, fittings made of copper alloys, soldered or zinc-plated should not be used. However couplings and accessories made of aluminium, stainless steel or carbon steel (but not zinc-plated) are highly recommended.

DANOIL9 AG, AS, SS, SG perfectly suits the biofuel application.

## INDUSTRIAL HOSES - composite



### Hose assemblies for fuel road tankers

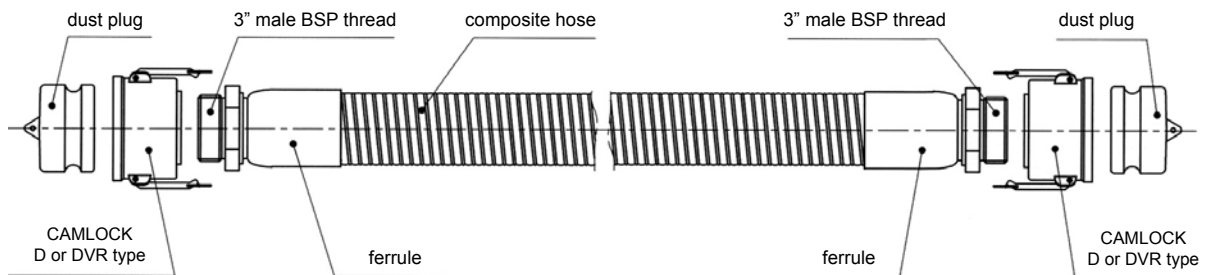
**Internal layer:** Polypropylene (film, fabric)  
**Reinforcement:** PVC-coated fabric resistant to abrasion and weather conditions  
**Fittings:** Aluminium  
**Ferrule:** Aluminium  
**Working press.:** Up to 10 bar  
**Vacuum:** Up to 0.9 bar  
**Working temp.:** From -30°C up to +80°C

**Characteristics:** Suction-delivery complete hose assemblies DN75 (3") designed for loading and unloading of petrochemical products (with aromatic content up to 50%). The hose assembly is produced using DANOIL TRANSPORT or FUELSTAR hose. Available in three versions - as hose assemblies for product transfer (CAMLOCK couplings at both ends) or vapour recovery (CAMLOCK vapour recovery coupling with a probe at one or at both ends). These hose assemblies are delivered with TDT certificate.

**Applications:** Equipment of fuel road tankers.

**Available versions:** GG - black colour (product), red colour (vapour).

### Hose assembly construction



sample code*	fitting side „A”	fitting side „B”
DT-CP-XXXX	CAMLOCK D 3" + dust plug DP 3"	CAMLOCK D 3" + dust plug DP 3"
DT-CO-XXXX	CAMLOCK D 3" + dust plug DP 3"	CAMLOCK DVR 3" + dust plug DP 3"
DT-DO-XXXX	CAMLOCK DVR 3" + dust plug DP 3"	CAMLOCK DVR 3" + dust plug DP 3"

\* - XXXX stands for the length of a hose assembly given in millimeters - tolerance +0 / -100 mm.

# INDUSTRIAL HOSES - composite



## DANCHEM

**Internal layer:** Polypropylene (film, fabric)  
**Reinforcement:** Internal/external wire helix, fabric layers (polypropylene)  
**Cover:** PVC-coated fabric resistant to abrasion and weather conditions  
**Working temp.:** From -30°C up to +100°C

- Characteristics:** Suction-delivery hose designed for transfer, loading and unloading of chemicals (acids, bases, solvents, petrochemical products etc.). Safety factor 4:1 (HD - Heavy Duty version - 5:1). A special version - DANCHEM SS NC (Nylon Cover) coated with polyamide fabric is intended for applications where the hose must be immersed in a container with petrochemical products - hoses draining water from floating roofs.
- Applications:** Loading/unloading systems, loading/unloading equipment, loading and unloading of road and rail tankers, road tanker equipment, industrial installations.
- Standards:** EN 13765:2010+A1:2015 (type 3), meets the requirements of IMO (International Maritime Organisation) and IBC Code as well as USCR (United States Coastguard Requirements).
- Available versions:** PG, GS, SG, SS - grey colour.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	maximum length [m]
PG, GS, SG, SS version						
DT-DANCHEM...-025	25	14	0.9	100	0.80	25
DT-DANCHEM...-038	38	14	0.9	140	1.20	25
DT-DANCHEM...-050	50	14	0.9	180	1.90	30
DT-DANCHEM...-065	65	14	0.9	205	2.50	25
DT-DANCHEM...-075	75	14	0.9	280	3.00	30
DT-DANCHEM...-100	100	14	0.9	395	5.20	30
HEAVY DUTY version						
DT-DANCHEM...HD-100	100	14	0.9	405	6.40	30
DT-DANCHEM...HD-150	150	14	0.9	510	10.70	30
DT-DANCHEM...HD-200	200	14	0.9	760	15.00	30
DT-DANCHEM...HD-250	250	10.5	0.9	915	20.50	30



## INDUSTRIAL HOSES - composite



### ★★★★★ CHEMSTAR

**Internal layer:** Polypropylene (film, fabric)

**Reinforcement:** Internal/external wire helix, fabric layers (polypropylene)

**Cover:** Polyester-coated fabric resistant to abrasion and weather conditions

**Working temp.:** From -30°C up to +80°C

**Characteristics:** Suction-delivery hose designed for transfer, loading and unloading of chemicals, acids, bases, solvents in standard working conditions. Internal wire helix is made of zinc-plated steel coated with polypropylene layer, external wire helix is made of zinc-plated steel. Safety factor 5:1.

**Applications:** Loading systems, loading/unloading equipment, loading and unloading of road and rail tankers, road tanker equipment, loading arms, industrial installations.

**Standards:** EN 13765:2010+A1:2015 (type 2).

**Available versions:** PG - green colour.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	maximum length [m]
SO-CHEMSTAR-PG-025	25	10	0.7	100	0.77	40
SO-CHEMSTAR-PG-038	38	10	0.7	140	1.33	40
SO-CHEMSTAR-PG-050	50	10	0.7	150	1.56	40
SO-CHEMSTAR-PG-065	65	10	0.7	200	1.87	40
SO-CHEMSTAR-PG-075	75	10	0.7	250	2.23	40
SO-CHEMSTAR-PG-100	100	10	0.7	300	3.62	40





## INDUSTRIAL HOSES - composite



### DANCHEM CRYOGENIC

**Internal layer:** Film and thermoplastic fabric  
**Reinforcement:** Internal/external wire helix, fabric layers  
**Cover:** Polyamide-coated fabric resistant to abrasion and weather conditions  
**Working temp.:** From -104°C up to +80°C

**Characteristics:** Suction-delivery hose designed for transfer, loading and unloading of cryogenic substances (low temperature transfer) e.g. LPG, ammonia, carbon dioxide, ethylene. Internal and external wire helix is made of AISI 316 steel, internal layers of fabric and film made of thermoplastic material, resistant to low temperature. Safety factor 5:1.

**Applications:** Loading/unloading systems, loading/unloading equipment, loading and unloading of road and rail tankers, road tanker equipment, industrial installations.

**Standards:** EN 13766:2010; HD version also meets the requirements of USCG, IMO Code for marine application.

**Available versions:** SS - white colour.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	maximum length [m]
DT-DANCHEMPA-025	25	25	0.9	100	1.00	25
DT-DANCHEMPA-038	38	25	0.9	140	1.50	25
DT-DANCHEMPA-050	50	25	0.9	180	2.50	30
DT-DANCHEMPA-065	65	25	0.9	205	3.30	25
DT-DANCHEMPA-075	75	25	0.9	280	4.50	30
DT-DANCHEMPA-100	100	25	0.9	395	7.50	30
DT-DANCHEMPA-150	150	21	0.9	510	13.50	30
DT-DANCHEMPA-200	200	21	0.9	760	18.50	30
DT-DANCHEMPA-250	250	15	0.9	915	25.00	30



## INDUSTRIAL HOSES - composite



### DANFLON

**Internal layer:** ECTFE film, polypropylene

**Reinforcement:** Internal/external wire helix, fabric layers (polyester)

**Cover:** PVC-coated fabric resistant to abrasion and weather conditions

**Working temp.:** From -30°C up to +80°C (+150°C)

**Characteristics:** Suction-delivery hose designed for transfer, loading and unloading of highly aggressive chemicals, solvents, molten sulphur, bitumen. Internal layer made of ECTFE (ethylene chlorotrifluoroethylene - highly resistant to chemicals). Safety factor 4:1 (HD - Heavy Duty version - 5:1). A special hose version is resistant to high temperatures up to +150°C.

**Applications:** Loading/unloading systems, loading/unloading equipment, loading and unloading of road and rail tankers, road tanker equipment, industrial installations.

**Standards:** EN 13765:2010 +A1 2015 type 3 or 4 (special version intended for higher working temperatures), meets the requirements of IMO (International Maritime Organisation) and IBC Code as well as USCR (United States Coastguard Requirements).

**Available versions:** GG, SG, SS, GGA, SGA, SSA - blue colour.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	maximum length [m]
DT-DANFLON...-025	25	14	0.9	100	0.80	25
DT-DANFLON...-038	38	14	0.9	140	1.20	25
DT-DANFLON...-050	50	14	0.9	180	1.90	30
DT-DANFLON...-065	65	14	0.9	205	2.50	25
DT-DANFLON...-075	75	14	0.9	280	3.00	30
DT-DANFLON...-100	100	14	0.9	395	5.20	30
HEAVY DUTY version						
DT-DANFLON...HD-100	100	14	0.9	405	6.40	30
DT-DANFLON...HD-150	150	14	0.9	510	10.70	30
DT-DANFLON...HD-200	200	14	0.9	760	15.00	30
DT-DANFLON...HD-250	250	10.5	0.9	915	20.50	30



## INDUSTRIAL HOSES - composite

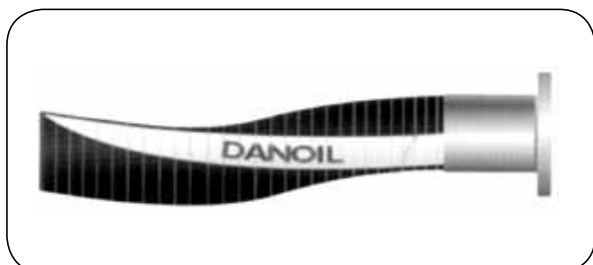


### ★★★★★ CHEMSTAR PTFE

**Internal layer:** ECTFE film, polypropylene  
**Reinforcement:** Internal/external wire helix, fabric layers (polypropylene)  
**Cover:** Polyester-coated fabric resistant to abrasion and weather conditions  
**Working temp.:** From -30°C up to +80°C

**Characteristics:** Suction-delivery hose designed for transfer, loading and unloading of highly aggressive substances in standard working conditions. Safety factor 5:1.  
**Applications:** Loading/unloading systems, loading/unloading equipment, loading and unloading of road and rail tankers, road tanker equipment, industrial installations.  
**Standards:** EN 13765:2010+A1:2015 (type 2).  
**Available versions:** SS - blue colour.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	maximum length [m]
SO-CHEMSTAR-PTFE-SS-025	25	10	0.7	100	0.77	40
SO-CHEMSTAR-PTFE-SS-038	38	10	0.7	140	1.33	40
SO-CHEMSTAR-PTFE-SS-050	50	10	0.7	150	1.56	40
SO-CHEMSTAR-PTFE-SS-065	65	10	0.7	200	1.87	40
SO-CHEMSTAR-PTFE-SS-075	75	10	0.7	250	2.23	40
SO-CHEMSTAR-PTFE-SS-100	100	10	0.7	300	3.62	40



### VAPOUR RECOVERY

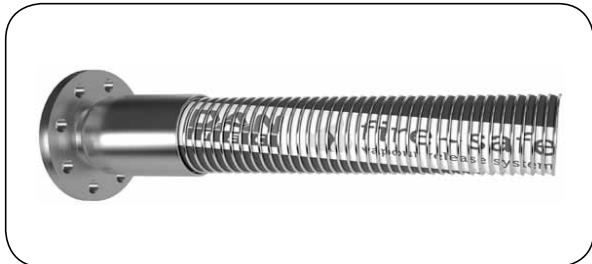
**Internal layer:** Polypropylene (film, fabric)  
**Reinforcement:** Internal/external wire helix, fabric layers (polypropylene)  
**Cover:** PVC-coated fabric resistant to abrasion and weather conditions  
**Working temp.:** From -30°C up to +80°C

**Characteristics:** A special version of DANOIL and DANCHEM hose designed to recover vapours during loading or unloading of petrochemical products. It is lighter and much more flexible when compared to a standard version. Safety factor 4:1.  
**Applications:** Vapour recovery hose assemblies in loading/unloading systems, loading/unloading equipment, road tanker equipment, industrial installations.  
**Standards:** EN 13765:2010 + A1 2015 (type 1).  
**Available versions:** PG, PS, SG, SS - yellow colour.

code	I.D. [mm]	working pressure [bar]	vacuum [bar]	bending radius [mm]	weight [kg/m]	maximum length [m]
DT-DAN...VR...-075	75	7	0.5	205	2.40	30
DT-DAN...VR...-100	100	7	0.5	265	3.40	30
DT-DAN...VR...-150	150	7	0.5	485	8.30	30
DT-DAN...VR...-200	200	7	0.5	700	12.50	30
DT-DAN...VR...-250	250	7	0.5	880	20.50	30

## INDUSTRIAL HOSES - composite

### FIRESAFE

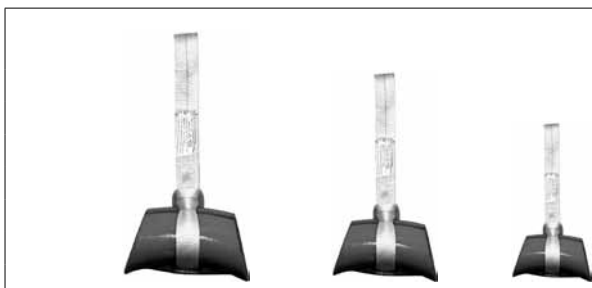


All composite hoses are available in a fire retardant version - FIRESAFE. Applying additional layers which repel heat and retard fire allows keeping the medium flowing and the system tight long enough to deal with the emergency situation and prevent further damage. When tested, the FIRESAFE hose filled with jet fuel is intact and tight for over 30 minutes in extreme fire conditions at +800°C and it still retards fire even at +1200°C. What is more, after this period, the wall of the hose does not burst abruptly but instead gradually releases the product through the wall and burns it off. Firefighting and rescue operations can be carried out safely.



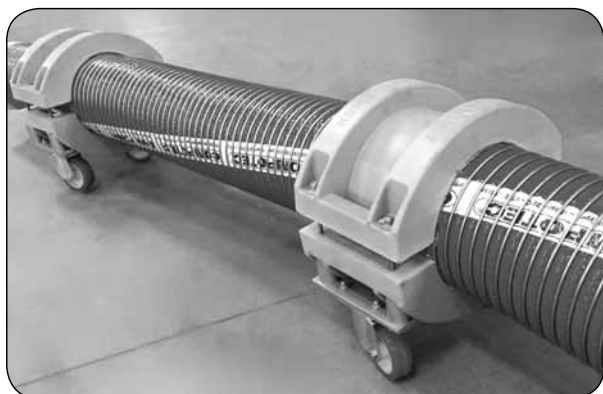
### HOSE BUN (support slings)

Special hose bun made of abrasion resistant polyurethane with slings. Used for lifting and suspension of all types of hoses during loading/unloading. HOSE BUN protects against the collapse and premature failure of the hose. Recommended for composite hoses in particular. Its construction enables installation onto already connected hoses. A vivid red colour of the bun makes the hose clearly visible during handling. Supplied with slings made of nylon as a standard.



code	hose DN [mm]
DT-HB-025	25
DT-HB-038	38
DT-HB-050	50
DT-HB-075	75
DT-HB-100	100
DT-HB-150	150
DT-HB-200	200

## INDUSTRIAL HOSES - composite



### TROLLEY (hose trolley)

code	hose O.D. [mm]
DT-TROLL-075	80 ÷ 90
DT-TROLL-100	100 ÷ 110
DT-TROLL-150	150 ÷ 165
DT-TROLL-200	195 ÷ 225
DT-TROLL-250	250 ÷ 275
DT-TROLL-300	300 ÷ 325

Trolleys are designed for easy and comfortable carrying of composite hoses (or hoses made of other materials). The use of trolleys protects the hoses against mechanical damage caused by carrying or dragging across the floor. The trolley comes with two swivel wheels as a standard (a version with four wheels is available to special order). Holders made of polyurethane are mounted on a steel base. Due to this combination of materials, the trolley is rigid, durable and relatively lightweight. The wheels can be easily screwed off and replaced. The wheels come in two diameters 100 or 125 mm, depending on the size of the trolley.



### Protection rings

Rubber protection rings protect against abrasion wherever dragging of the hose across the floor cannot be avoided. They are made of oil-resistant, extruded rubber strip which is cut for required length and mounted on the hose using worm drive clamps. A silicone version is approved for contact with food according to FDA 177 260 and BGA XV.


strip code	material	width [mm]	height [mm]	working temp. [°C]	hardness [°Sh(A)]
DT-SS-1404-N	NBR	39	17	from -25 up to +100	65
DT-SS-1404-E	EPDM	39	16	from -30 up to +120	70
DT-SS-1404-S	Silicone	38	16	from -50 up to +200	70


hose DN	rubber strip		clamp code	
	strip code	length [mm]	zinc-plated steel	stainless steel
25	DT-SS-1404-N DT-SS-1404-E DT-SS-1404-S	155	AB-03009004	AB-03017738
38		200	AB-03009006	AB-03017535
50		235	AB-03009007	AB-03017543
65		286	AB-03009009	AB-03017560
75		325	AB-03009010	AB-03017578
100		410	AB-03009013	AB-03017607
150		565	AB-03009017	AB-03017640
200		770	AB-03009024	AB-03017690

# INDUSTRIAL HOSES - composite

## Fittings for composite hoses


Composite hoses are supplied as complete hose assemblies. The assembly process is very complex and requires special machines and equipment. Each composite hose assembly consists of: composite hose, fitting, ferrule and seal. These elements must be chosen very carefully and correctly for the whole hose assembly to work properly. After the specific hose is picked, one must consider which ferrule to choose from - made of either aluminium, stainless steel or carbon steel, and match the seal to come underneath the ferrule. Both elements are not in direct contact with the medium, however, if chosen well, they will improve e.g. the service life of the whole hose assembly. The stainless steel ferrules are used when the hose assembly is permanently exposed to weather conditions or operates in chemical plants, where the concentration of corrosive substances in the air is elevated. The aluminium ferrules are used in fuel applications - in petrochemical industry, whereas the ferrules made of carbon steel (zinc-plated) are the best choice whenever economy is the key factor. Fittings suitable for the composite hoses are limited to a few basic types: male or female thread fittings, fixed or swivel flange, fitting integrated with CAMLOCK coupling - coupler or adapter. The fittings are primarily made of: carbon steel, stainless steel or aluminium. However, other options of the fitting material are also available. The most popular solution is to use a male thread fitting with an adequate coupling screwed on it, e.g.: TW (tankwagen), CAMLOCK, STORZ, dry disconnect couplings and emergency breakaway couplings.

picture	hose DN	code (carbon steel)	code (AISI316L)	code (AISI304)	code (aluminium)
	25	DT-T-025	DT-T-025-SS	DT-T-025-SS304-SO	-
		DT-T-025-SO			
	38	DT-T-038	DT-T-038-SS	DT-T-050-SS304-SO	-
		DT-T-038-SO			
	50	DT-T-050	DT-T-050-SS	DT-T-050-SS304-SO	DT-T-050-A-SO
		DT-T-050-SO			
	65	DT-T-065	DT-T-065-SS	DT-T-065-SS304-SO	DT-T-065-A-SO
		DT-T-065-SO			
	75	DT-T-075	DT-T-075-SS	DT-T-075SS304-SO	DT-T-075-A
		DT-T-075A-SO			DT-T-075-A-SO
	100	DT-T-100	DT-T-100-SS	DT-T-075-SS304-SO	DT-T-100-A
		DT-T-100-SO	DT-T-100-HD-SS		DT-T-100-A-SO
		DT-T-100-HD			
	150	DT-T-150-HD	DT-T-150-HD-SS	-	-
200	DT-T-200-HD	DT-T-200-HD-SS	-	-	


picture	hose DN	code (NBR)	code (Viton)	code (EPDM)
	25	DT-UT-025-N	DT-UT-025-V	DT-UT-025-E-SO
		DT-UT-025-N-SO	DT-UT-025-V-SO	
	38	DT-UT-038-N	DT-UT-038-V	DT-UT-038-E-SO
		DT-UT-038-N-SO	DT-UT-038-V-SO	
	50	DT-UT-050-N	DT-UT-050-V	DT-UT-050-E-SO
		DT-UT-050-N-SO	DT-UT-050-V-SO	
	65	DT-UT-065-N	DT-UT-065-V	DT-UT-065-E-SO
		DT-UT-065-N-SO	DT-UT-065-V-SO	
	75	DT-UT-075-N	DT-UT-075-V	DT-UT-075-E-SO
		DT-UT-075-N-SO	DT-UT-075-V-SO	
	100	DT-UT-100-N	DT-UT-100-V	DT-UT-100-E-SO
		DT-UT-100-N-SO	DT-UT-100-V-SO	
	150	DT-UT-150-N	DT-UT-150-V	-
	200	DT-UT-200-N	DT-UT-200-V	-

# INDUSTRIAL HOSES - composite

## Fittings for composite hoses


picture	hose DN	code (carbon steel)	code (stainless steel)	code (aluminium)	code (UHMWPE)	code (bronze / brass)
	25	DT-KGZ-025-SO	DT-KGZ-025-SS	-	DT-KGZ-025-P	DT-KGZ-025-B
			DT-KGZ-025-SS-SO			
			DT-KGZ-025-SS304-SO			
			DT-KGZ-025-SSE*			
	38	DT-KGZ-038-SO	DT-KGZ-038-SS	-	DT-KGZ-038-P	DT-KGZ-038-B
			DT-KGZ-038-SS-SO			
			DT-KGZ-038-SS304-SO			
			DT-KGZ-038-SSE*			
	50	DT-KGZ-050-SO	DT-KGZ-050-SS	DT-KGZ-050-A	DT-KGZ-050-P	DT-KGZ-050-B
			DT-KGZ-050-SS-SO			DT-KGZ-050-M
			DT-KGZ-050-SS304-SO			
			DT-KGZ-050-SSE*			
	65	DT-KGZ-065-SO	DT-KGZ-065-SS	DT-KGZ-065-A	DT-KGZ-065-P	DT-KGZ-065-B
			DT-KGZ-065-SS-SO			
			DT-KGZ-065-SS304-SO			
			DT-KGZ-065-SSE*			
	75	DT-KGZ-075-SO	DT-KGZ-075-SS	DT-KGZ-075-A	DT-KGZ-075-P	DT-KGZ-075-B
			DT-KGZ-075-SS-SO			DT-KGZ-075-M
			DT-KGZ-075-SS304-SO			
			DT-KGZ-075-SSE*			
	100	DT-KGZ-100-SO	DT-KGZ-100-SS	DT-KGZ-100-A	DT-KGZ-100-P	DT-KGZ-100-B
			DT-KGZ-100-SS-SO			DT-KGZ-100-M
			DT-KGZ-100-SS304-SO			DT-KGZ-100-M-SO


\* - ECTFE-coated fitting


picture	hose DN	code (carbon steel)	code (AISI316)	code (AISI304)
	25	DT-KGZT-025-SO	DT-KGZT-025-SS	DT-KGZT-025-SS304-SO
			DT-KGZT-025-SS-SO	
	38	DT-KGZT-038-SO	DT-KGZT-038-SS	DT-KGZT-038-SS304-SO
			DT-KGZT-038-SS-SO	
	50	DT-KGZT-050-SO	DT-KGZT-050-SS	DT-KGZT-050-SS304-SO
			DT-KGZT-050-SS-SO	
	65	DT-KGZT-065-SO	DT-KGZT-065-SS-SO	DT-KGZT-065-SS304-SO
	75	DT-KGZT-075-SO	DT-KGZT-075-SS	DT-KGZT-075-SS304-SO
			DT-KGZT-075-SS-SO	
	100	DT-KGZT-100-SO	-	-

# INDUSTRIAL HOSES - composite

## Fittings for composite hoses

picture	hose DN	code (carbon steel)	code (AISI316)	code (AISI304)
	25	DT-KGZN-025-SO	DT-KGZN-025-SS-SO	DT-KGZN-025-SS304-SO
	38	DT-KGZN-038-SO	DT-KGZN-038-SS-SO	DT-KGZN-038-SS304-SO
	50	DT-KGZN-050-SO	DT-KGZN-050-SS-SO	DT-KGZN-050-SS304-SO
	65	DT-KGZN-065-SO	DT-KGZN-065-SS-SO	DT-KGZN-065-SS304-SO
	75	DT-KGZN-075-SO	DT-KGZN-075-SS-SO	DT-KGZN-075-SS304-SO


picture	hose DN	code (AISI316)	code (aluminium)	code (bronze / brass)
	25	DT-KCC-025-SS	-	-
	38	DT-KCC-038-SS	DT-KCC-038-A	-
	50	DT-KCC-050-SS	DT-KCC-050-A	DT-KCC-050-B
	65	-	-	DT-KCC-065-B
	75	DT-KCC-075-SS	DT-KCC-075-A	DT-KCC-075-B
	100	DT-KCC-100-SS	DT-KCC-100-A	-

picture	hose DN	code (AISI316)	code (aluminium)	code (bronze / brass)
	25	DT-KCE-025-SS	-	-
	38	DT-KCE-038-SS	-	-
	50	DT-KCE-050-SS	DT-KCE-050-A	DT-KCE-050-B
	75	DT-KCE-075-SS	DT-KCE-075-A	DT-KCE-075-B
	100	DT-KCE-100-SS	DT-KCE-100-A	-




# INDUSTRIAL HOSES - composite

## Fittings for composite hoses

picture	hose DN	code (stainless steel)	code (aluminium)	code (bronze / brass)
	25	DT-KGW-025-SS-N DT-KGW-025-SS-W DT-KGWU-025-T	-	DT-KGW-025-B-N DT-KGW-025-B-W DT-KGWU-025-T
	38	DT-KGW-038-SS-N DT-KGW-038-SS-W DT-KGWU-038-T	-	DT-KGW-038-B-N DT-KGW-038-B-W DT-KGWU-038-T
	50	DT-KGW-050-SS-N DT-KGW-050-SS-W DT-KGWU-050-T	DT-KGW-050-A-W DT-KGWU-050-T	DT-KGW-050-B-N DT-KGW-050-B-W DT-KGWU-050-T
				DT-KGW-050-M-N DT-KGW-050-M-W DT-KGWU-050-T
	65	DT-KGW-065-SS-N DT-KGW-065-SS-W DT-KGWU-065-T	-	DT-KGW-065-B-N DT-KGW-065-B-W DT-KGWU-065-T
	75	DT-KGW-075-SS-N DT-KGW-075-SS-W DT-KGWU-075-T	DT-KGW-075-A-W DT-KGWU-075-T	DT-KGW-075-B-N DT-KGW-075-B-W DT-KGWU-075-T
				DT-KGW-075-M-N DT-KGW-075-M-W DT-KGWU-075-T
	100	DT-KGW-075-SS-N DT-KGW-075-SS-W DT-KGWU-100-T	DT-KGW-100-A-N DT-KGW-100-A-W DT-KGWU-100-T	DT-KGW-100-B-N DT-KGW-100-B-W DT-KGWU-100-T
				DT-KGW-100-M-N DT-KGW-100-M-W DT-KGWU-100-T

A complete fitting consists of three elements: nut (N), insert (W) and seal (T).


Example of a set of codes for the stainless steel fitting, size DN75 (3"): DT-KGZ-075-SS-N + DT-KGW- 075-SS-W + DT-KGW-075-T.

picture	hose DN	code (carbon steel)	code (stainless steel)	code (UHMWPE)
	25	DT-KKS-025	DT-KKS-025-SS	DT-KKS-025-P
		DT-KKS-025-SO	DT-KKS-025-SS304-SO	
			DT-KKS-025-SS316-SO	
	38	DT-KKS-038	DT-KKS-038-SS	DT-KKS-038-
		DT-KKS-038-SO	DT-KKS-038-SS304-SO	
			DT-KKS-038-SS316-SO	
	50	DT-KKS-050	DT-KKS-050-SS	DT-KKS-050-P
			DT-KKS-050-SS304-SO	
			DT-KKS-050-SS316-SO	
		DT-KKS-050-SO	DT-KKS-050-SSE*	
	65	DT-KKS-075	DT-KKS-065-SS	DT-KKS-065-P
		DT-KKS-075-SO	DT-KKS-065-SS304-SO	
			DT-KKS-065-SS316-SO	
	75	DT-KKS-075	DT-KKS-075-SS	DT-KKS-075-P
			DT-KKS-075-SS304-SO	
			DT-KKS-075-SS316-SO	
		DT-KKS-075-SO	DT-KKS-075-SSE*	
	100	DT-KKS-100	DT-KKS-100-SS	DT-KKS-100-P
		DT-KKS-100-SO	DT-KKS-100-SS304-SO	
			DT-KKS-100-SS316-SO	
	150	DT-KKS-150	DT-KKS-150-SS	-
	200	DT-KKS-200	DT-KKS-200-SS	-

\* - ECTFE-coated fitting.

# INDUSTRIAL HOSES - composite

## Fittings for composite hoses

picture	hose DN	code (carbon steel)	code (stainless steel)	code (UHMWPE)
	25	DT-KKO-025 DT-KKO-025-W	DT-KKO-025-SS DT-KKO-025-SS-W	DT-KKO-025-P-W
			DT-KKO-025-SS304-SO*	
		DT-KKO-025-SO	DT-KKO-025-SS316-SO*	
	38	DT-KKO-038 DT-KKO-038-W	DT-KKO-038-SS DT-KKO-038-SS-W	DT-KKO-038-P-W
			DT-KKO-038-SS304-SO*	
		DT-KKO-038-SO*	DT-KKO-038-SS316-SO*	
	50	DT-KKO-050 DT-KKO-050-W	DT-KKO-050-SS DT-KKO-050-SS-W	DT-KKO-050-P DT-KKO-050-P-W
			DT-KKO-050-SS304-SO*	
			DT-KKO-050-SS316-SO*	
		DT-KKO-050-SO*	DT-KKO-050-SSE-W	
	65	DT-KKO-065 DT-KKO-065-W	DT-KKO-065-SS DT-KKO-065-SS-W	DT-KKO-065-P-W
			DT-KKO-065-SS304-SO*	
		DT-KKO-065-SO*	DT-KKO-065-SS316-SO*	
	75	DT-KKO-075 DT-KKO-075-W	DT-KKO-075-SS DT-KKO-075-SS-W	DT-KKO-075-P-W
			DT-KKO-075-SS304-SO*	
		DT-KKO-075-SO*	DT-KKO-075-SS316-SO*	
			DT-KKO-075-SSE-W	
	100	DT-KKO-100 DT-KKO-100-W	DT-KKO-100-SS DT-KKO-100-SS-W	DT-KKO-100-P-W
			DT-KKO-100-SS-SO*	
		DT-KKO-100-SO*	DT-KKO-100-SS304-SO*	
	150	DT-KKO-150 DT-KKO-150-W	DT-KKO-150-SS DT-KKO-150-SS-W	-
	200	DT-KKO-200 DT-KKO-200-W	DT-KKO-200-SS DT-KKO-200-SS-W	-

A complete fitting consists of two elements: flange and insert (W).

Example for DN75: DT-KKO-075-SS + DT-KKO-075-SS-W.

\* - codes DT-KKO-...SO - complete fitting.

material marking:

A - aluminium

B - bronze

P - polyethylene (UHMWPE)

SS - stainless steel

no marking - carbon steel

N - NBR

V - Viton

T - PTFE

S - leather

## Stripwound hoses

### Characteristics:

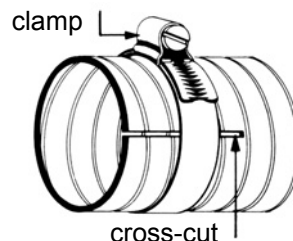
Hoses folded from a metal band („Peschel hoses”): made by spiral winding of an extruded metal band, usually zinc-plated carbon steel or stainless steel. Extrusion of the band allows its edges to overlap and ensures hose flexibility. Additionally, different kinds of seals can be used. Such hoses are mainly used for low pressure applications, vacuum or as protective covers.



GRIPLOCK stripwound hose



INTERLOCK stripwound hose



Depending on its diameter GRIPLOCK hose can retain a required angle once bent or does not retain it. INTERLOCK hose does not retain any shape or angle and has a seal made of rubber, cotton or copper wire.

### Application



#### Extraction and removal of fumes and gases

Stripwound hoses are frequently used to remove smoke, gas, dust or fumes. They can be used at temperature by far higher than plastic ducting hoses are used. Mounted with special clamps. Sold per meter.



#### Industrial hoses - dry and loose product transfer

Delivered as complete hose assemblies with fittings, e.g. male or female thread, couplings such as CAMLOCK, GUILLEMIN, STORZ. Used for low pressure transfer of different kinds of granulated products, abrasive or aggressive loose products, cement, grain etc.



#### Protective hoses

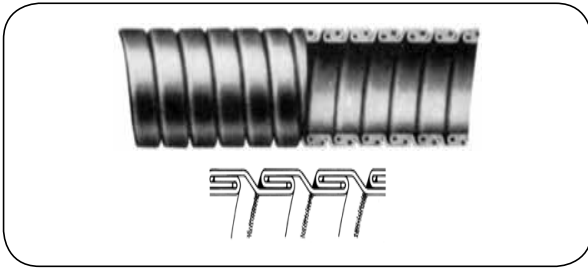
Stripwound hoses are well suited to protect soft, more fragile hoses in heavy duty working conditions.

Usually used to protect:

- external braid,
- bunch of cables (e.g. electrical),
- against kinking,
- against abrasion of a plastic hose,
- against droplets of light metals e.g. aluminium.

## INDUSTRIAL HOSES - metal

### Stripwound hoses



#### GRIPLOCK G

**Material:** Galvanized carbon steel

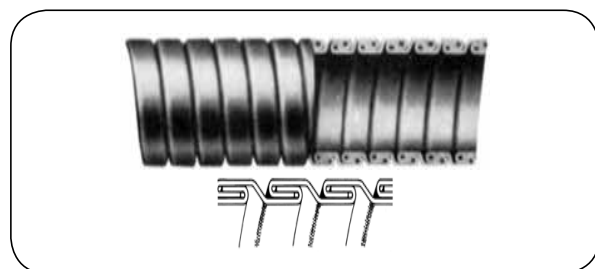
**Working temp.:** Up to +500°C

Flexible steel hose designed to transfer gas with fluid particles, smoke, fumes, dry loose materials (ash, dust, grain, granulated products). Widely used also as a protection hose. Assembled on exhaust outlets of engines to absorb vibration, noise and to limit thermal expansion. Standard version maintains shape. FLOPPY version that does not maintain shape is available up to 76 mm diameter (code example: WH-GRIPLOCK-G-006-F).

code	I.D. [mm]	O.D. [mm]	bending radius [mm]	weight [kg/m]
WH-GRIPLOCK-G-006	6	9	25	0.16
WH-GRIPLOCK-G-008	8	11	30	0.18
WH-GRIPLOCK-G-010	10	13	33	0.23
WH-GRIPLOCK-G-012	12	16	45	0.30
WH-GRIPLOCK-G-016	16	20	55	0.33
WH-GRIPLOCK-G-020	20	24	59	0.34
WH-GRIPLOCK-G-022	22	26	63	0.40
WH-GRIPLOCK-G-025	25	29	78	0.49
WH-GRIPLOCK-G-028	28	33	90	0.62
WH-GRIPLOCK-G-032	32	37	96	0.75
WH-GRIPLOCK-G-035	35	40	103	0.88
WH-GRIPLOCK-G-038	38	45	110	1.01
WH-GRIPLOCK-G-041	41	48	115	1.08
WH-GRIPLOCK-G-045	45	52	123	1.18
WH-GRIPLOCK-G-048	48	55	129	1.26
WH-GRIPLOCK-G-051	51	58	135	1.35
WH-GRIPLOCK-G-054	54	61	143	1.37
WH-GRIPLOCK-G-057	57	64	150	1.39
WH-GRIPLOCK-G-060	60	67	158	1.41
WH-GRIPLOCK-G-063	63	70	165	1.42
WH-GRIPLOCK-G-070	70	77	180	1.68
WH-GRIPLOCK-G-076	76	83	195	2.25
WH-GRIPLOCK-G-079	79	84	260	2.30
WH-GRIPLOCK-G-083	83	88	269	2.45
WH-GRIPLOCK-G-086	86	91	280	2.52
WH-GRIPLOCK-G-089	89	94	290	2.61
WH-GRIPLOCK-G-092	92	97	302	2.70
WH-GRIPLOCK-G-095	95	100	312	2.85
WH-GRIPLOCK-G-098	98	103	322	2.92
WH-GRIPLOCK-G-102	102	107	328	3.10
WH-GRIPLOCK-G-108	108	115	350	3.15
WH-GRIPLOCK-G-114	114	121	369	3.25
WH-GRIPLOCK-G-127	127	134	403	3.40
WH-GRIPLOCK-G-140	140	147	446	3.80
WH-GRIPLOCK-G-152	152	159	485	4.19
WH-GRIPLOCK-G-178	178	185	560	4.85
WH-GRIPLOCK-G-203	203	210	640	5.50
WH-GRIPLOCK-G-229	229	236	718	6.15
WH-GRIPLOCK-G-254	254	261	797	6.80
WH-GRIPLOCK-G-279	279	286	873	7.60
WH-GRIPLOCK-G-305	305	312	950	8.40
WH-GRIPLOCK-G-330	330	337	1030	8.98
WH-GRIPLOCK-G-356	356	363	1112	9.55
WH-GRIPLOCK-G-381	381	388	1188	10.25
WH-GRIPLOCK-G-406	406	413	1268	10.90
WH-GRIPLOCK-G-432	432	439	1348	11.60
WH-GRIPLOCK-G-457	457	464	1425	12.25

# INDUSTRIAL HOSES - metal

## Stripwound hoses



### GRIPLOCK 304 (316)

**Material:** AISI 304 steel (AISI 316 steel - the same parameters, code WH-GRIPLOCK-316...)

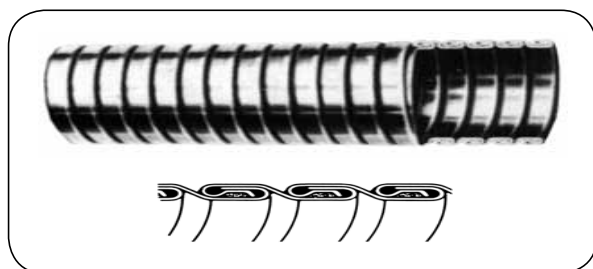
**Working temp.:** Up to +650°C

Flexible steel hose designed to transfer gas with fluid particles, smoke, fumes, dry loose materials (ash, dust, grain, granulated products). Widely used also as a protection hose. Assembled on exhaust outlets of engines to absorb vibration, noise and to limit thermal expansion. Standard version maintains shape. FLOPPY version that does not maintain shape is available up to 76 mm diameter (code example: WH-GRIPLOCK-304-006-F).

code	I.D. [mm]	O.D. [mm]	bending radius [mm]	weight [kg/m]
WH-GRIPLOCK-304-006	6	8	33	0.10
WH-GRIPLOCK-304-008	8	10	40	0.15
WH-GRIPLOCK-304-010	10	12	49	0.18
WH-GRIPLOCK-304-012	12	15	68	0.23
WH-GRIPLOCK-304-016	16	19	73	0.31
WH-GRIPLOCK-304-020	20	23	79	0.34
WH-GRIPLOCK-304-022	22	25	85	0.38
WH-GRIPLOCK-304-025	25	28	90	0.40
WH-GRIPLOCK-304-028	28	32	115	0.48
WH-GRIPLOCK-304-032	32	36	120	0.55
WH-GRIPLOCK-304-035	35	39	125	0.60
WH-GRIPLOCK-304-038	38	42	130	0.65
WH-GRIPLOCK-304-041	41	45	142	0.70
WH-GRIPLOCK-304-045	45	49	153	0.77
WH-GRIPLOCK-304-048	48	52	164	0.82
WH-GRIPLOCK-304-051	51	55	175	0.87
WH-GRIPLOCK-304-054	54	59	189	0.97
WH-GRIPLOCK-304-057	57	62	204	1.03
WH-GRIPLOCK-304-060	60	65	218	1.08
WH-GRIPLOCK-304-063	63	68	232	1.14
WH-GRIPLOCK-304-070	70	75	260	1.26
WH-GRIPLOCK-304-076	76	81	264	1.71
WH-GRIPLOCK-304-079	79	85	273	1.77
WH-GRIPLOCK-304-083	83	89	283	1.86
WH-GRIPLOCK-304-086	86	92	295	1.93
WH-GRIPLOCK-304-089	89	95	305	2.00
WH-GRIPLOCK-304-092	92	98	318	2.06
WH-GRIPLOCK-304-095	95	101	328	2.13
WH-GRIPLOCK-304-098	98	104	339	2.20
WH-GRIPLOCK-304-102	102	108	345	2.29
WH-GRIPLOCK-304-108	108	114	368	2.42
WH-GRIPLOCK-304-114	114	120	388	2.56
WH-GRIPLOCK-304-127	127	133	424	2.85
WH-GRIPLOCK-304-140	140	146	469	3.14
WH-GRIPLOCK-304-152	152	158	510	3.41
WH-GRIPLOCK-304-178	178	184	590	3.99
WH-GRIPLOCK-304-203	203	209	673	4.55
WH-GRIPLOCK-304-229	229	235	755	5.14
WH-GRIPLOCK-304-254	254	260	838	7.93
WH-GRIPLOCK-304-279	279	285	919	8.71
WH-GRIPLOCK-304-305	305	311	1000	9.52
WH-GRIPLOCK-304-330	330	336	1085	10.30
WH-GRIPLOCK-304-356	356	362	1169	11.11
WH-GRIPLOCK-304-381	381	387	1250	11.89
WH-GRIPLOCK-304-406	406	412	1334	12.67
WH-GRIPLOCK-304-432	432	438	1418	13.48
WH-GRIPLOCK-304-457	457	463	1500	14.26

## INDUSTRIAL HOSES - metal

### Stripwound hoses



#### INTERLOCK G

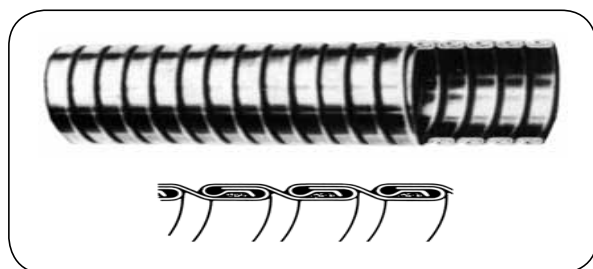
**Material:** Galvanized carbon steel  
**Seal:** Copper wire (optionally cotton or rubber)  
**Working temp.:** Up to +500°C (with copper wire seal)

Flexible steel hose designed to transfer dry loose materials (ash, dust, grain, granulated products). Widely used also as a protection hose and in various applications e.g. to absorb vibration, noise and to limit thermal expansion.

code	I.D. [mm]	O.D. [mm]	bending radius [mm]	weight [kg/m]
WH-INTERLOCK-G-020	20	25	100	0.59
WH-INTERLOCK-G-022	22	27	110	0.71
WH-INTERLOCK-G-025	25	30	125	0.86
WH-INTERLOCK-G-028	28	33	140	0.92
WH-INTERLOCK-G-032	32	37	160	1.00
WH-INTERLOCK-G-035	35	40	175	1.09
WH-INTERLOCK-G-038	38	43	190	1.19
WH-INTERLOCK-G-041	41	46	205	1.29
WH-INTERLOCK-G-045	45	50	225	1.39
WH-INTERLOCK-G-048	48	53	240	1.47
WH-INTERLOCK-G-051	51	56	255	1.59
WH-INTERLOCK-G-054	54	60	270	1.72
WH-INTERLOCK-G-057	57	63	285	1.84
WH-INTERLOCK-G-060	60	66	300	1.95
WH-INTERLOCK-G-063	63	69	315	2.08
WH-INTERLOCK-G-066	66	72	330	2.18
WH-INTERLOCK-G-070	70	76	350	2.26
WH-INTERLOCK-G-072	72	78	365	2.34
WH-INTERLOCK-G-076	76	82	380	2.41
WH-INTERLOCK-G-079	79	85	395	2.47
WH-INTERLOCK-G-083	83	89	415	2.52
WH-INTERLOCK-G-086	86	92	430	2.56
WH-INTERLOCK-G-089	89	95	445	2.69
WH-INTERLOCK-G-092	92	98	460	2.80
WH-INTERLOCK-G-095	95	101	475	2.86
WH-INTERLOCK-G-098	98	104	490	2.90
WH-INTERLOCK-G-102	102	108	510	2.96
WH-INTERLOCK-G-105	105	111	525	3.04
WH-INTERLOCK-G-108	108	114	540	3.10
WH-INTERLOCK-G-114	114	120	570	3.24
WH-INTERLOCK-G-121	121	127	605	3.38
WH-INTERLOCK-G-127	127	133	635	3.51
WH-INTERLOCK-G-130	130	136	650	3.58
WH-INTERLOCK-G-140	140	146	700	3.80
WH-INTERLOCK-G-152	152	158	760	4.07
WH-INTERLOCK-G-165	165	171	825	4.35
WH-INTERLOCK-G-178	178	184	890	4.62
WH-INTERLOCK-G-203	203	209	1015	5.17
WH-INTERLOCK-G-229	229	235	1145	5.72
WH-INTERLOCK-G-250	250	256	1250	6.26
WH-INTERLOCK-G-279	279	285	1395	6.80
WH-INTERLOCK-G-305	305	311	1525	7.31

# INDUSTRIAL HOSES - metal

## Stripwound hoses



### INTERLOCK 304 (316)

**Material:** AISI 304 steel (AISI 316 steel - the same parameters, code WH-INTER-LOCK-316...)

**Seal:** Copper wire (optionally cotton or rubber)

**Working temp.:** Up to +650°C (with copper wire seal)

Flexible steel hose designed to transfer dry loose materials (ash, dust, grain, granulated products). Widely used also as a protection hose and in various applications e.g. to absorb vibration, noise and to limit thermal expansion.

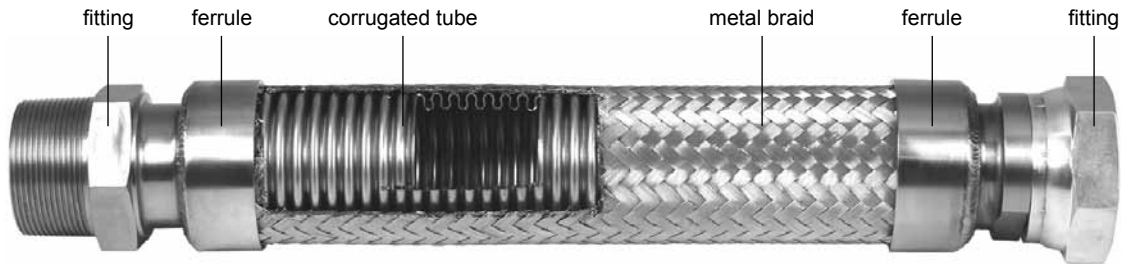
code	I.D. [mm]	O.D. [mm]	bending radius [mm]	weight [kg/m]
WH-INTERLOCK-304-020	20	25	100	0.45
WH-INTERLOCK-304-022	22	27	110	0.52
WH-INTERLOCK-304-025	25	30	125	0.60
WH-INTERLOCK-304-028	28	33	140	0.68
WH-INTERLOCK-304-032	32	37	160	0.75
WH-INTERLOCK-304-035	35	40	175	0.82
WH-INTERLOCK-304-038	38	43	190	0.90
WH-INTERLOCK-304-041	41	46	205	0.98
WH-INTERLOCK-304-045	45	50	225	1.02
WH-INTERLOCK-304-048	48	53	240	1.10
WH-INTERLOCK-304-051	51	56	255	1.19
WH-INTERLOCK-304-054	54	60	270	1.25
WH-INTERLOCK-304-057	57	63	285	1.35
WH-INTERLOCK-304-060	60	66	300	1.40
WH-INTERLOCK-304-063	63	69	315	1.45
WH-INTERLOCK-304-066	66	72	330	1.52
WH-INTERLOCK-304-070	70	76	350	1.60
WH-INTERLOCK-304-072	72	78	365	1.70
WH-INTERLOCK-304-076	76	82	380	1.78
WH-INTERLOCK-304-079	79	85	395	1.85
WH-INTERLOCK-304-083	83	89	415	1.90
WH-INTERLOCK-304-086	86	92	430	1.98
WH-INTERLOCK-304-089	89	95	445	2.05
WH-INTERLOCK-304-092	92	98	460	2.15
WH-INTERLOCK-304-095	95	101	475	2.20
WH-INTERLOCK-304-098	98	104	490	2.30
WH-INTERLOCK-304-102	102	108	510	2.38
WH-INTERLOCK-304-105	105	111	525	2.42
WH-INTERLOCK-304-108	108	114	540	2.50
WH-INTERLOCK-304-114	114	120	570	2.60
WH-INTERLOCK-304-127	127	133	635	2.85
WH-INTERLOCK-304-130	130	136	650	2.92
WH-INTERLOCK-304-140	140	146	700	3.10
WH-INTERLOCK-304-152	152	158	760	3.35
WH-INTERLOCK-304-165	165	171	825	3.60
WH-INTERLOCK-304-178	178	184	890	3.85
WH-INTERLOCK-304-203	203	209	1015	4.35
WH-INTERLOCK-304-229	229	235	1145	4.95
WH-INTERLOCK-304-250	250	256	1250	5.60
WH-INTERLOCK-304-279	279	285	1395	6.25
WH-INTERLOCK-304-305	305	311	1525	6.85

## Pressure hoses

### Characteristic and application

Flexible pressure hoses and metal hose assemblies meet all working conditions and requirements that are unattainable for rubber or plastic hoses.

Pressure metal hoses are manufactured by parallel or spiral corrugation of thin-walled metal tube. The lead and depth of corrugations create necessary flexibility, resistance to deformation and vacuum. Widely used as complete metal hose assemblies in no braid, single or double braid versions. Versions in metal wire braid resist internal pressure. Used in all branches of industry to transfer: hot water, steam, oils, chemicals, gaseous and liquid gases etc.



### Advantages of metal pressure hoses

- resistance to ageing, heat, oils and hydrocarbons, various chemicals, steam, hot water, etc.,
- wide range of temperature resistance (from -270°C up to +800°C),
- non-flammability,
- resistance to high pressure and vacuum,
- impermeability to penetrating gases and liquids,
- large diameter and low temperature flexibility, kink resistance,
- high thermal and electrical conductivity,
- permanent assembly of fittings (welding), relatively safe run of possible breakdown.

### Proper selection, installation and use of a hose assembly

Due to unique construction of pressure metal hoses it is required to contact Sales or Technical Department of TUBES INTERNATIONAL® in order to select the hose properly. Installation and usage guidelines of pressure metal hose assemblies are outlined in a manual on the following page.

### Important notes on pressure metal hoses:

- follow installation and handling guides given in the manual,
- the hose must not be twisted during installation and usage,
- dynamic hose flexing has to be defined and taken into consideration,
- it is necessary to match the material of the hose and fittings taking into account corrosive action of both media to be transferred and external conditions,
- note must be taken of vibrations occurrence and its influence,
- high flow velocity in a corrugated hose can cause turbulence, big pressure drop and occurrence of dangerous vibrations,
- temperature correction factor has to be taken into consideration - values given in the tables apply to working pressure at +20°C.



# INDUSTRIAL HOSES - metal

## Pressure steel assemblies complying with ISO 10380

ISO 10380 (PN-EN ISO 10380:2003) defines material specifications as well as construction and pressure requirements for flexible steel hoses. One of the conditions is to ensure the life of 10 000 cycles of standard flexing of the hose at minimum bend radius and maximum working pressure defined for dynamic conditions. However TUBES INTERNATIONAL® also provides hoses whose cycle life of 50000 is guaranteed.

## Hose material

The most popular hose material:

- AISI 304 stainless steel (braid),
- AISI 321 stainless steel (hose),
- AISI 316 L stainless steel (hose and braid),
- copper alloy: bronze (hose and braid, used up to +200°C),
- nickel alloys: monel, Inconel (hose and braid, used to achieve high corrosion resistance, against chlorine in particular).

## Temperature correction factors of metal hoses

Temperature correction factor (compliant with EN ISO 10380:2003)  
applies to all metal hoses, except B-FLEX and C-FLEX

steel	temperature [°C]																		
	-200	-100	0	+20	+50	+100	+150	+200	+250	+300	+350	+400	+450	+500	+550	+600	+650	+700	+750
321	1.00	1.00	1.00	1.00	0.93	0.83	0.78	0.74	0.70	0.66	0.64	0.62	0.60	0.59	0.58	*	*	*	*
316L	1.00	1.00	1.00	1.00	0.90	0.73	0.67	0.61	0.58	0.53	0.51	0.50	0.49	0.47	0.47	*	*	*	*

\* - application after confirmation with Technical Department of TUBES INTERNATIONAL®

## Temperature correction factor for B-FLEX and C-FLEX

temperature [°C]															
-200	+20	+50	+100	+150	+200	+250	+300	+350	+400	+450	+500	+550	+600	+650	+700
1	1	0.89	0.72	0.64	0.58	0.54	0.5	0.48	0.46	0.44	0.43	0.43	0.34	0.19	0.1

## Correction factors for dynamic operation

flow	motion		
	no vibration, slow, small motion	vibration, frequent, constant motion	high vibration, high motion - heavy duty service
constant and slow	1	0.8	0.4
pulsation, variable	0.8	0.63	0.32
pulsation, steady	0.32	0.2	not recommended

## Assembly of metal hose fittings

The fittings of flexible pressure steel assemblies can be installed in the following ways:

- twisting (special kind of a reusable fittings, allowing direct assembly on an installation, with limited pressure parameters),
- soft soldering or brazing - with limited temperature resistance,
- TIG method (tungsten inert gas welding) - the most popular method.

Steel hose fittings can be made of carbon steel, AISI 304 and AISI 316 stainless steel as well as copper alloys (brass, bronze).

## NOTE !!!

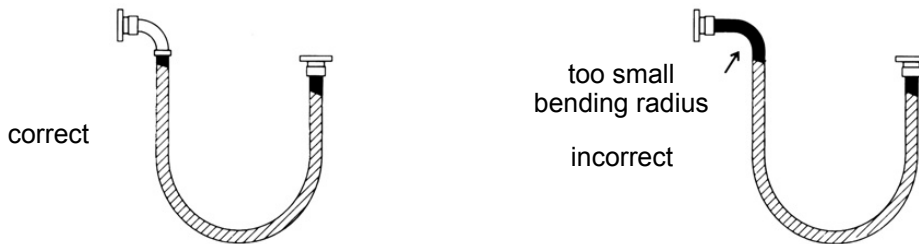
Carbon steel fittings should not be used at temperatures below -20°C and above +400°C.

# INDUSTRIAL HOSES - metal

## Pressure metal hoses installation and usage manual

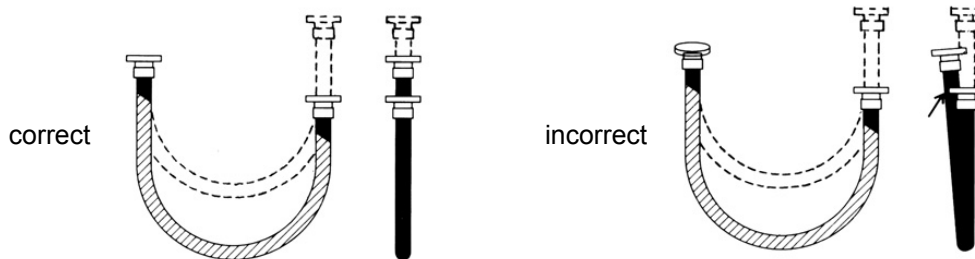
A steel hose has to be properly installed to prolong its life and to ensure faultless service. The main reason of failure is material fatigue on the hose corrugation. It is vital to remember that all elastic assemblies have limited service life. If they are used to deliver dangerous media (e.g. hot or flammable substances, dangerous chemicals), test and inspections should be carried out regularly.

### Hose breakage prevention



Bending radius of a steel hose should not be smaller than the one given in the manual to avoid material fatigue or premature damage. It is necessary to prevent sharp bends in the hose near its fittings.

### Hose kinking prevention



It is kinking of a hose that causes failure or premature wear. So as to prevent hose kinking a swivel flange should be installed on one of the hose ends. The hose should always be installed in such a way that its movement is the same as its symmetry axis.

### Hose elongation and squeezing prevention



If a hose is squeezed or stretched, its life is significantly shortened.

### Hose abrasion prevention

If a hose is installed in a position causing rubbing against other objects, its service life is shorter.

### NEVER EXCEED HOSE MAXIMUM WORKING PRESSURE !!!

A hose must not be used under the pressure higher than its working pressure. Working temperature should always be taken into account and the maximum working pressure should be adjusted by proper factor. Contact Technical Department of TUBES INTERNATIONAL® in case of any problems.

### Hose damage

Hoses with any signs of failure or leakage must be exchanged immediately.

## INDUSTRIAL HOSES - metal

### Pressure hoses - steel



#### METALFLEX / M

**Internal layer:** AISI 316L steel corrugated hose  
**Reinforcement:** Single AISI 304 steel braid  
**Working temp.:** From -270°C up to +700°C (working pressure depends on temperature)

Steel hose designed to transfer chemicals, gases and steam under pressure or in high vacuum conditions. Available with fittings described further in the catalogue on request. Safety factor 4:1.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	static bending radius [mm]	dynamic bending radius [mm]	weight [kg/m]
TB-METALFLEX-M-010	10.1	15.8	110	50	130	0.23
TB-METALFLEX-M-012	12.2	18.5	80	65	140	0.26
TB-METALFLEX-M-016	16.2	23.8	64	65	160	0.33
TB-METALFLEX-M-020	20.3	28.3	64	70	170	0.53
TB-METALFLEX-M-025	25.4	34	50	100	190	0.70
TB-METALFLEX-M-032	32.5	44.8	40	115	265	1.14
TB-METALFLEX-M-040	41.7	53.6	30	150	290	1.37
TB-METALFLEX-M-050	52	64	28	160	320	1.61
TB-METALFLEX-M-065	66	79.5	24	175	430	2.15
TB-METALFLEX-M-075	76	93.5	18	210	520	2.29
TB-METALFLEX-M-100	103	120.5	16	225	640	3.25
TB-METALFLEX-M-125	125	152	12	318	900	5.78
TB-METALFLEX-M-150	151	182	10	353	1050	6.20
TB-METALFLEX-M-200	197.5	231.8	8	456	1180	9.90



#### METALICA / F

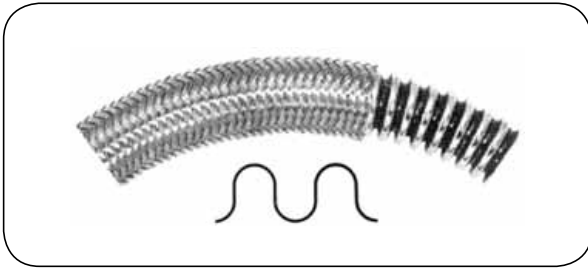
**Internal layer:** AISI 316L steel corrugated hose  
**Reinforcement:** Single AISI 304 steel braid  
**Working temp.:** From -270°C up to +600°C (working pressure depends on temperature)

Steel hose designed to transfer chemicals, gases and steam under pressure or in high vacuum conditions. Supplied as a complete hose assembly with fittings described further in the catalogue. Safety factor 4:1.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	static bending radius [mm]	dynamic bending radius [mm]
TB-METALICA-F-006	6.3	10.6	150	25	80
TB-METALICA-F-008	8.4	13.2	112	32	124
TB-METALICA-F-010	10.1	15.4	97	38	130
TB-METALICA-F-012	12.4	17.7	75	45	140
TB-METALICA-F-016	16.4	23.3	60	58	160
TB-METALICA-F-020	20.3	28.2	62	70	170
TB-METALICA-F-025	25.4	33.7	43	85	190
TB-METALICA-F-032	33.8	43.0	46	105	260
TB-METALICA-F-040	39.8	51.4	42	130	300
TB-METALICA-F-050	50.2	62.0	32	160	320
TB-METALICA-F-065	63.0	80.0	35	200	460
TB-METALICA-F-080	80.0	98.0	35	240	660
TB-METALICA-F-100	99.0	118.0	25	290	750

## INDUSTRIAL HOSES - metal

### Pressure hoses - steel



#### PARNOR®

**Internal layer:** AISI 321 steel corrugated hose  
(316L for diameters: 6, 8, 10 and 125 mm)

**Reinforcement:** Single AISI 304 steel braid as a standard

**Working temp.:** From -273°C up to +600°C (working pressure depends on temperature)

The highest quality steel hose designed to transfer chemicals, gases and steam under pressure or in high vacuum conditions. Meets the requirements of ISO 10380 standard. Parallel corrugations of the hose obtained by hydroforming ensure extreme resistance to fatigue and stress corrosion. Suitable for dynamic application (when it bends at regular rate), where its service life in EN ISO 10380 conditions is as long as 50.000 cycles at the maximum working pressure for dynamic conditions. The highest quality of this hose is assured by pressure and tightness tests carried out on each production level. Available as no braid or double braid version as well. Supplied as a complete hose assembly with fittings for steel hoses. If the hose is used at elevated temperature, its working pressure should be reduced by temperature correction factor according to EN ISO 10380 (given in the technical description at the beginning of this chapter). Safety factor 4:1 (under dynamic conditions).

code	DN [mm]	O.D. [mm]	working pressure [bar]	min. bending radius [mm]	
				static conditions	dynamic conditions
TB-PARNOR-006*	6	11.4	140	23	110
TB-PARNOR-008	8	15.2	115	28	130
TB-PARNOR-010	10	17.8	100	32	450
TB-PARNOR-012	12	20.2	80	39	165
TB-PARNOR-015	15	24.1	63	50	195
TB-PARNOR-020	20	29.9	50	60	225
TB-PARNOR-025	25	36.4	40	73	260
TB-PARNOR-032	32	45.4	40	90	300
TB-PARNOR-040	40	54.4	32	115	340
TB-PARNOR-050	50	67.3	32	140	390
TB-PARNOR-065*	65	83.4	25	175	460
TB-PARNOR-080	80	102.6	23	240	660
TB-PARNOR-100	100	129.5	15	290	750
TB-PARNOR-125*	125	155	13	340	1000
TB-PARNOR-150*	150	177	11	390	1250

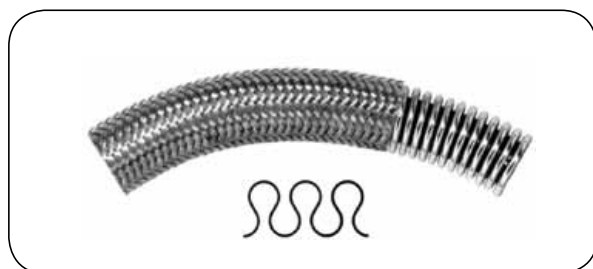
\* - does not meet the service life requirement of 50.000 cycles



**TUBES INTERNATIONAL® was granted GERMANISCHER LLOYD and DNV Certificates for producing PARNOR stainless steel hose assemblies (from DN6 ÷ DN100) for shipbuilding and marine industry applications. Please contact Technical Department for more information.**

# INDUSTRIAL HOSES - metal

## Pressure hoses - steel



### PARRAP®

**Internal layer:** AISI 321 steel corrugated hose  
(316L for diameters: 6, 8, 10 and 125 mm)  
**Reinforcement:** Single AISI 304 steel braid as a standard  
**Working temp.:** From -273°C up to +600°C (working pressure depends on temperature)

Extremely flexible, top quality steel hose designed to transfer chemicals, gases, steam under pressure or in high vacuum conditions. Thanks to exceptional omega-shaped corrugations it is strongly recommended for application demanding highly flexible connection. Meets the requirements of ISO 10380 standard. Parallel corrugations of the hose obtained by hydroforming ensure extreme resistance to fatigue and stress corrosion. Suitable for dynamic application (when it bends at regular rate), where its service life in EN ISO 10380 conditions is as long as 50.000 cycles at the maximum working pressure for dynamic conditions. The highest quality of this hose is assured by pressure and tightness tests carried out on each production level. Available as no braid or double braid version as well. Supplied as a complete hose assembly with fittings for steel hoses. If the hose is used at elevated temperature, its working pressure should be reduced by temperature correction factor according to EN ISO 10380 (given in the technical description at the beginning of this chapter). Safety factor 4:1 (under dynamic conditions).

code	DN [mm]	O.D. [mm]	working pressure [bar]	min. bending radius [mm]	
				static conditions	dynamic conditions
TB-PARRAP-006*	6	11.4	150	20	110
TB-PARRAP-008	8	15.2	115	20	130
TB-PARRAP-010	10	17.8	115	20	150
TB-PARRAP-012	12	20.2	80	25	124
TB-PARRAP-015	15	24.1	63	32	146
TB-PARRAP-020	20	29.9	55	38	169
TB-PARRAP-025	25	36.4	40	45	195
TB-PARRAP-032	32	45.4	40	58	225
TB-PARRAP-040	40	54.4	32	70	255
TB-PARRAP-050	50	67.3	32	85	293
TB-PARRAP-065*	65	83.4	25	105	345
TB-PARRAP-080	80	102.6	23	180	495
TB-PARRAP-100	100	129.5	15	218	563
TB-PARRAP-125*	125	155.0	13	255	1000
TB-PARRAP-150*	150	177.0	11	290	1250

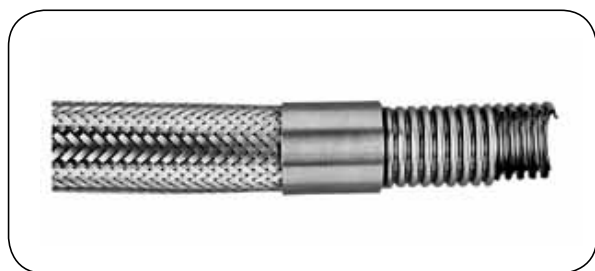
\* - does not meet the service life requirement of 50.000 cycles



**TUBES INTERNATIONAL® was granted GERMANISCHER LLOYD and DNV Certificates for producing PARRAP stainless steel hose assemblies (from DN6 ÷ DN100) for shipbuilding and marine industry applications. Please contact Technical Department for more information.**

# INDUSTRIAL HOSES - metal

## Pressure hoses - steel



### HP, THP

**Internal layer:** AISI 316L steel corrugated hose (DN32, DN100 - AISI 321 steel)

**Reinforcement:** Single (HP) or double (THP) AISI 304 steel braid

**Working temp.:** From -270°C up to +800°C (working pressure depends on temperature)

Exclusive high pressure steel hose with heavy wall and close pitch, annular corrugation obtained by hydroforming. Designed to transfer chemicals, gases, steam under pressure and in high vacuum conditions. Designed according to the requirements of EN ISO 10380 class 1. Supplied as a complete hose assembly with fittings for steel hoses on request. If the hose is used at elevated temperature, its working pressure should be reduced by temperature correction factor according to EN ISO 10380 (given in the technical description at the beginning of this chapter). Safety factor 4:1 (under dynamic conditions).

### HP (single braid)

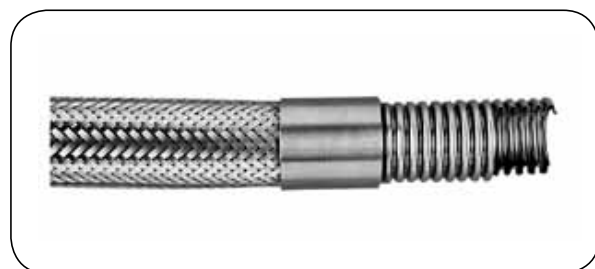
code	DN [mm]	O.D. [mm]	dynamic conditions		static conditions	
			working pressure [bar]	min. bending radius [mm]	working pressure [bar]	min. bending radius [mm]
TB-HP-006	6	11.4	180	110	225	25
TB-HP-010	10	17.8	145	150	166	38
TB-HP-012	12	20.2	140	165	175	45
TB-HP-020	20	29.1	85	225	99	70
TB-HP-025	25	38	78	215	91	85
TB-HP-032	32	46.5	65	300	78	105
TB-HP-040	40	54.9	61	280	68	130
TB-HP-050	50	67.3	55	390	62	160
TB-HP-080	80	99	25	660	33	240
TB-HP-100	100	129.5	24	750	27	290

### THP (double braid)

code	DN [mm]	O.D. [mm]	dynamic conditions		static conditions	
			working pressure [bar]	min. bending radius [mm]	working pressure [bar]	min. bending radius [mm]
TB-THP-006	6	13	255	110	293	25
TB-THP-010	10	19.4	195	150	223	38
TB-THP-012	12	21.8	185	165	213	45
TB-THP-020	20	30.7	125	225	147	70
TB-THP-025	25	40	124	260	142	85
TB-THP-032	32	49	115	300	134	105
TB-THP-040	40	57.4	90	340	104	130
TB-THP-050	50	69.8	78	390	92	160
TB-THP-080	80	102	50	660	66	240
TB-THP-100	100	132.5	45	750	51	290

# INDUSTRIAL HOSES - metal

## Pressure hoses - steel



### B-FLEX

- Internal layer:** AISI 321 S31 steel corrugated hose (AISI 316L steel to special order)
- Reinforcement:** Single or double AISI 304 steel braid (AISI 316L steel to special order)
- Working temp.:** From -270°C up to +800°C (working pressure depends on temperature)

Steel hose designed to transfer chemicals, gases, steam under pressure or in high vacuum conditions. Available on request with fittings described further in the catalogue. No braid version available as well.

#### B-FLEX (single braid)

code	DN [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	dynamic * bending radius [mm]	weight [kg/m]
TB-BFLEX1-006	6	15	140	560	100	0.28
TB-BFLEX1-010	10	18	100	400	125	0.39
TB-BFLEX1-012	12	23	90	360	125	0.50
TB-BFLEX1-016	16	28	65	260	150	0.55
TB-BFLEX1-020	20	31.5	55	220	150	0.62
TB-BFLEX1-025	25	37.5	48	192	175	0.80
TB-BFLEX1-032	32	47	38	152	200	1.15
TB-BFLEX1-040	40	55.5	34	136	250	1.50
TB-BFLEX1-050	50	71	31	124	350	2.10
TB-BFLEX1-065	65	88.5	27	108	500	2.65
TB-BFLEX1-080	80	100	24	96	525	3.13
TB-BFLEX1-100	100	130	15	60	625	4.15
TB-BFLEX1-125	125	169	14	56	750	6.40
TB-BFLEX1-150	150	183	9	36	900	7.85
TB-BFLEX1-200	200	241	8	32	1020	11.20
TB-BFLEX1-250	250	290	6	24	1220	15.30

#### B-FLEX (double braid)

code	DN [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	dynamic * bending radius [mm]	weight [kg/m]
TB-BFLEX2-006	6	17.6	250	1000	100	0.40
TB-BFLEX2-010	10	20.6	155	620	125	0.56
TB-BFLEX2-012	12	25.5	131	524	125	0.71
TB-BFLEX2-016	16	30	105	420	150	0.75
TB-BFLEX2-020	20	34.6	93	372	150	0.90
TB-BFLEX2-025	25	40.5	77	308	175	1.13
TB-BFLEX2-032	32	51	62	248	200	1.70
TB-BFLEX2-040	40	60	46	184	250	2.20
TB-BFLEX2-050	50	75	43	172	350	3.05
TB-BFLEX2-065	65	91	37	148	500	3.90
TB-BFLEX2-080	80	105	34	136	525	4.55
TB-BFLEX2-100	100	136	18	72	625	6.05
TB-BFLEX2-125	125	165	17	68	750	9.10
TB-BFLEX2-150	150	188	14	56	900	11.50
TB-BFLEX2-200	200	246	14	56	1020	16.20
TB-BFLEX2-250	250	295	10	40	1220	20.80

\* static bending radius is 60% of dynamic bending radius

# INDUSTRIAL HOSES - metal

## Pressure hoses - steel



### C-FLEX

- Internal layer:** AISI 321 S31 steel corrugated hose (AISI 316L steel to special order)
- Reinforcement:** Single or double AISI 304 steel braid (AISI 316L steel to special order)
- Working temp.:** From -270°C up to +800°C (working pressure depends on temperature)

Steel hose designed to transfer chemicals, gases, steam under pressure or in high vacuum conditions. Recommended for applications demanding increased resistance to vibrations. Available on request with fittings described further in the catalogue. No braid version available as well.

#### C-FLEX (single braid)

code	DN [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	dynamic * bending radius [mm]	weight [kg/m]
TB-CFLEX1-006	6	15	160	640	75	0.33
TB-CFLEX1-010	10	18	138	552	90	0.48
TB-CFLEX1-012	12	23	103	412	100	0.60
TB-CFLEX1-020	20	31.5	62	248	115	0.75
TB-CFLEX1-025	25	37.5	52	208	125	0.95
TB-CFLEX1-032	32	47	42	168	150	1.40
TB-CFLEX1-040	40	56.5	38	152	200	1.75
TB-CFLEX1-050	50	71	34	136	275	2.45
TB-CFLEX1-065	65	86.5	31	124	350	3.00
TB-CFLEX1-080	80	100	27	108	400	3.55
TB-CFLEX1-100	100	130	17	68	500	4.80
TB-CFLEX1-125	125	159	16	64	660	7.50
TB-CFLEX1-150	150	183	10	40	760	9.10

#### C-FLEX (double braid)

code	DN [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	dynamic * bending radius [mm]	weight [kg/m]
TB-CFLEX2-006	6	17.5	275	1100	75	0.45
TB-CFLEX2-010	10	20.5	172	690	90	0.65
TB-CFLEX2-012	12	25.5	155	620	100	0.80
TB-CFLEX2-020	20	34.5	110	440	115	1.00
TB-CFLEX2-025	25	40.5	90	360	125	1.25
TB-CFLEX2-032	32	51.5	69	276	150	1.95
TB-CFLEX2-040	40	60.5	52	208	200	2.45
TB-CFLEX2-050	50	75.5	48	192	275	3.40
TB-CFLEX2-065	65	91.5	41	164	350	4.20
TB-CFLEX2-080	80	106	38	152	400	5.00
TB-CFLEX2-100	100	136	20	80	500	6.70
TB-CFLEX2-125	125	165	19	76	660	10.20
TB-CFLEX2-150	150	188	15	60	760	12.70


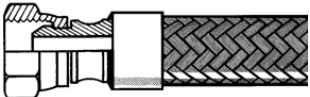
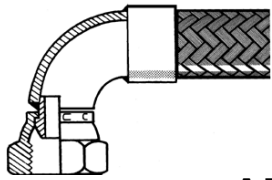
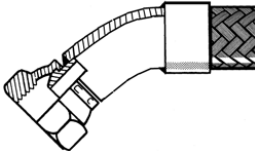

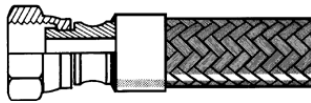
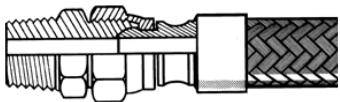

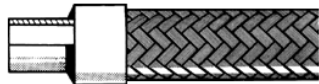

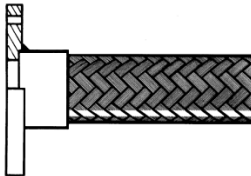
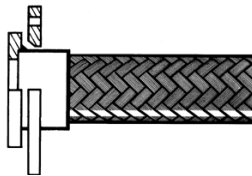
\* static bending radius is 60% of dynamic bending radius



# INDUSTRIAL HOSES - metal

## Fittings for metal hoses

TUBES INTERNATIONAL® supplies complete steel hose assemblies with fittings made of carbon steel, AISI 304 or AISI 316 steel. The types of fittings dedicated for steel hoses are listed below. The fittings such as: metric, JIC, NPT, custom made (according to customer specification) and many more are available on request.

BSPT (taper) thread	BSP thread, cone 60°	BSP thread, cone 60°
 <b>AF1</b>	 <b>AF2</b>	 <b>AF5</b>
BSP thread, cone 60°	BSP thread	BSP thread, flat seal
 <b>AF6</b>	 <b>AF7</b>	 <b>AF14</b>
Union with BSPT thread	Union with BSP thread	Pipe fitting
 <b>AF11/AF2</b>	 <b>AF12/AF2</b>	 <b>AF9</b>
Weld-in fitting	Fixed flange	Swivel flange
 <b>AF10</b>	 <b>AF3</b>	 <b>AF4</b>

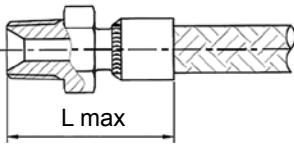
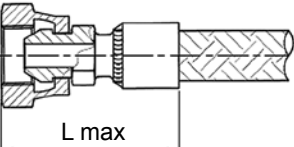
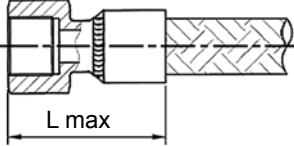
### Note:

- 1) The use of fittings made of carbon steel is limited by its working temperature ranging from -20°C up to +400°C and their limited corrosion resistance.
- 2) Swivel and fixed flanges are available according to DIN (PN-EN 1092-1) e.g. PN6, PN16, PN40 and according to ANSI (ASA150, ASA300).

Flange dimensions are given in the tables in TECHNICAL INFORMATION at the end of the catalogue.

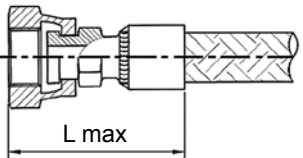
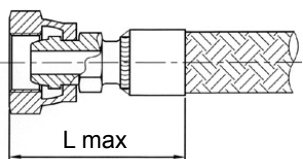
# INDUSTRIAL HOSES - metal

## Standard fittings for pressure metal hoses

picture	code	hose DN [mm]	thread size [inch]	L max [mm]	wrench size [mm]
<p>AF1 type BSPT male thread</p> 	TB-AF1-006	6	1/4"	38	17
	TB-AF1-008-04	8	1/4"	38	17
	TB-AF1-008-06	8	3/8"	42	19
	TB-AF1-010	10	3/8"	42	19
	TB-AF1-012-06	12	3/8"	44	19
	TB-AF1-012	12	1/2"	51	24
	TB-AF1-015-08	15/16	1/2"	54	24
	TB-AF1-015	15/16	5/8"	54	27
	TB-AF1-015-12	15/16	3/4"	58	30
	TB-AF1-020	20	3/4"	58	30
	TB-AF1-025	25	1"	72	36
	TB-AF1-032	32	1.1/4"	79	46
	TB-AF1-040	40	1.1/2"	94.5	50
	TB-AF1-050	50	2"	104	65
	TB-AF1-065	65	2.1/2"	119	80
	TB-AF1-080	75/80	3"	128	hook wrench
	TB-AF1-100	100	4"	137	hook wrench
<p>AF2 type AF2 type BSP female thread, cone 60° seal</p> 	TB-AF2-006	6	1/4"	38.5	19
	TB-AF2-008-04	8	1/4"	41.1	19
	TB-AF2-008-06	8	3/8"	43.5	22
	TB-AF2-010	10	3/8"	43.5	22
	TB-AF2-012	12	1/2"	49.5	27
	TB-AF2-015-08	15/16	1/2"	52.5	27
	TB-AF2-015	15/16	5/8"	54	30
	TB-AF2-015-12	15/16	3/4"	56	32
	TB-AF2-020	20	3/4"	56	32
	TB-AF2-025	25	1"	60.5	41
	TB-AF2-032	32	1.1/4"	69	50
	TB-AF2-040	40	1.1/2"	84	55
	TB-AF2-050	50	2"	91	70
	TB-AF2-065	65	2.1/2"	100	85
	TB-AF2-080	75/80	3"	96	hook wrench
	TB-AF2-100	100	4"	106	hook wrench
<p>AF7 type BSP female thread - fixed</p> 	TB-AF7-006	6	1/4"	36.5	19
	TB-AF7-008-04	8	1/4"	39.5	19
	TB-AF7-008-06	8	3/8"	40.5	22
	TB-AF7-010	10	3/8"	40	22
	TB-AF7-012	12	1/2"	50	27
	TB-AF7-015-08	15/16	1/2"	51	27
	TB-AF7-015	15/16	5/8"	52.5	30
	TB-AF7-015-12	15/16	3/4"	54	32
	TB-AF7-020	20	3/4"	55.5	32
	TB-AF7-025	25	1"	68	41
	TB-AF7-032	32	1.1/4"	74	46
	TB-AF7-040	40	1.1/2"	86	55
	TB-AF7-050	50	2"		
	TB-AF7-065	65	2.1/2"		
	TB-AF7-080	75/80	3"		
	TB-AF7-100	100	4"		

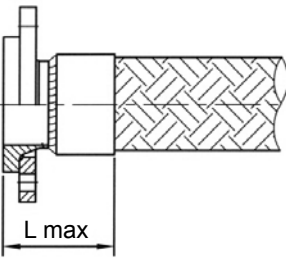
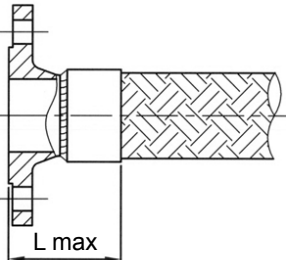
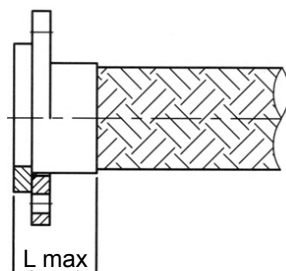
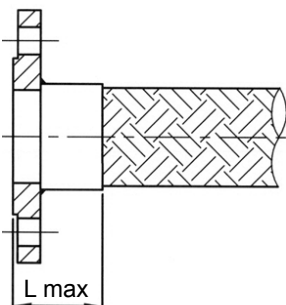
# INDUSTRIAL HOSES - metal

## Standard fittings for pressure metal hoses

picture	code	hose DN [mm]	thread size [inch]	L max [mm]	wrench size [mm]
<p>AF14 type BSP female thread, flat seal</p> 	TB-AF14-006	6	1/4"	38.1	19
	TB-AF14-008-04	8	1/4"	41.1	19
	TB-AF14-008-06	8	3/8"	44.1	22
	TB-AF14-010	10	3/8"	44.5	22
	TB-AF14-012-06	12	3/8"	47	22
	TB-AF14-012	12	1/2"	49	27
	TB-AF14-015-08	15/16	1/2"	52	27
	TB-AF14-015	15/16	5/8"	53.4	30
	TB-AF14-015-12	15/16	3/4"	56.4	32
	TB-AF14-020	20	3/4"	56.7	32
	TB-AF14-025	25	1"	60.5	41
	TB-AF14-032	32	1.1/4"	68.7	50
	TB-AF14-040	40	1.1/2"	84	55
	TB-AF14-050	50	2"	90	70
	TB-AF14-065	65	2.1/2"	99.3	85
	TB-AF14-080	75/80	3"	94.4	hook wrench
	TB-AF14-100	100	4"	99.9	hook wrench
<p>AF2M type Metric female thread, cone 24/60° seal</p> 	light series (L)				
	TB-AF2M111-14-006	6	M14x1.5	-	17
	TB-AF2M111-16-008	8	M16x1.5	-	22
	TB-AF2M111-18-010	10	M18x1.5	-	27
	TB-AF2M111-22-012	12	M22x1.5	-	27
	TB-AF2M111-26-015	15	M26x1.5	-	32
	TB-AF2M111-30-020	20	M30x2	-	41
	TB-AF2M111-36-025	25	M36x2	-	41
	TB-AF2M111-45-032	32	M45x2	-	50
	TB-AF2M111-52-040	40	M52x2	-	60
	heavy series (S)				
	TB-AF2M112-16-006	6	M16x1.5	-	22
	TB-AF2M112-18-006	6	M18x1.5	-	27
	TB-AF2M112-20-008	8	M20x1.5	-	27
	TB-AF2M112-22-010	10	M22x1.5	-	27
	TB-AF2M112-24-012	12	M24x1.5	-	32
	TB-AF2M112-30-015	15	M30x2	-	41
	TB-AF2M112-36-020	20	M36x2	-	41
	TB-AF2M112-42-025	25	M42x2	-	50
	TB-AF2M112-52-032	32	M52x2	-	60
	TB-AF2M112-52-040	40	M52x2	-	60

# INDUSTRIAL HOSES - metal

## Standard fittings for pressure metal hoses

picture	code	hose DN [mm]	L max [mm]
<b>AF4 type</b> Swivel flange PN16 	TK-KOPS-015 + TK-KO-015	15	56
	TK-KOPS-020 + TK-KO-020	20	58
	TK-KOPS-025 + TK-KO-025	25	65
	TK-KOPS-032 + TK-KO-032	32	67
	TK-KOPS-040 + TK-KO-040	40	75
	TK-KOPS-050 + TK-KO-050	50	75
	TK-KOPS-065 + TK-KO-065	65	80
	TK-KOPS-080 + TK-KO-080	80	85
	TK-KOPS-100 + TK-KO-100	100	87
	TK-KOPS-125 + TK-KO-125	125	-
	TK-KOPS-150 + TK-KO-150	150	-
<b>AF3 type</b> Fixed flange PN16 	TK-KSS-015	15	56
	TK-KSS-020	20	58
	TK-KSS-025	25	65
	TK-KSS-032	32	67
	TK-KSS-040	40	75
	TK-KSS-050	50	75
	TK-KSS-065	65	80
	TK-KSS-080	80	85
	TK-KSS-100	100	87
	TK-KSS-125	125	-
	TK-KSS-150	150	-
<b>AF4P type</b> Swivel flange PN16 - flat 	TK-KOPP-015 + TK-KO-015	15	30
	TK-KOPP-020 + TK-KO-020	20	32
	TK-KOPP-025 + TK-KO-025	25	39
	TK-KOPP-032 + TK-KO-032	32	39
	TK-KOPP-040 + TK-KO-040	40	44
	TK-KOPP-050 + TK-KO-050	50	46
	TK-KOPP-065 + TK-KO-065	65	51
	TK-KOPP-080 + TK-KO-080	80	53
	TK-KOPP-100 + TK-KO-100	100	55
	TK-KOPP-125 + TK-KO-125	125	-
	TK-KOPP-150 + TK-KO-150	150	-
<b>AF3P type</b> Fixed flange PN16 - flat 	TK-KSP-015	15	32
	TK-KSP-020	20	34
	TK-KSP-025	25	41
	TK-KSP-032	32	43
	TK-KSP-040	40	48
	TK-KSP-050	50	50
	TK-KSP-065	65	57
	TK-KSP-080	80	59
	TK-KSP-100	100	61
	TK-KSP-125	125	-
	TK-KSP-150	150	-

# INDUSTRIAL HOSES - metal

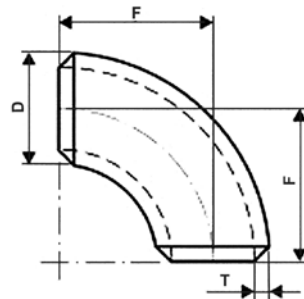
## Elbows



### 3D type

**Material:** P235 carbon steel, AISI 321 steel

90° elbow weld-in ends, compliant with PN-EN 10253 standard. Used as angular connection of metal and rubber hoses flanged or threaded ends. Safety factor 4:1.



code (carbon steel)	D diameter [mm]	T thickness [mm]	F radius [mm]	working pressure [bar]	hose DN [mm]
TB-KH90-021X2,0	21.3	2	29	139	15
TB-KH90-026X2,3	26.9	2.3	29	100	20
TB-KH90-033X2,6	33.7	2.6	38	92	25
TB-KH90-042X2,6	42.4	2.6	48	82	32
TB-KH90-048X2,6	48.3	2.6	57	72	40
TB-KH90-060X2,9	60.3	2.9	76	66	50
TB-KH90-076X2,9	76.1	2.9	95	52	65
TB-KH90-088X3,2	88.9	3.2	114	49	80
TB-KH90-114X3,6	114.3	3.6	152	43	100
TB-KH90-139X4,0	139.7	4	190	39	125
TB-KH90-168X4,5	168.3	4.5	229	37	150

code (AISI 321 steel)	D diameter [mm]	T thickness [mm]	F radius [mm]	working pressure [bar]	hose DN [mm]
TB-KH90-021X2,0-SS	21.3	2	29	130	15
TB-KH90-026X2,3-SS	26.9	2.3	29	93	20
TB-KH90-033X2,6-SS	33.7	2.6	38	86	25
TB-KH90-042X2,6-SS	42.4	2.6	48	76	32
TB-KH90-048X2,6-SS	48.3	2.6	57	67	40
TB-KH90-060X2,9-SS	60.3	2.9	76	61	50
TB-KH90-076X2,9-SS	76.1	2.9	95	48	65
TB-KH90-088X3,2-SS	88.9	3.2	114	45	88
TB-KH90-114X3,6-SS	114.3	3.6	152	40	100
TB-KH90-139X4,0-SS	139.7	4	190	37	125
TB-KH90-168X4,5-SS	168.3	4.5	229	34	150

## INDUSTRIAL HOSES - metal

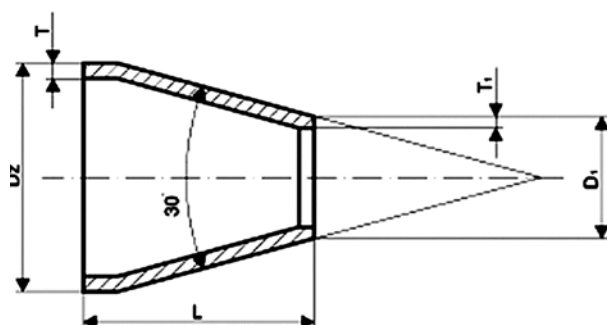
### Symmetric reducer



#### RS type

**Material:** P235 carbon steel  
AISI 321 stainless steel

Symmetric reducer, weld-in ends, made of carbon and stainless steel according to PN-EN 10253. Used to reduce diameter in order to adjust flange connection designed for rubber and metal hoses. Safety factor 4:1.







code (carbon steel)	Dz diameter [mm]	D1 diameter [mm]	T thickness [mm]	T1 thickness [mm]	L length [mm]	working pressure [bar]
TK-RS-026-021	26.9	21.3	2.3	2	38	198
TK-RS-033-026	33.7	26.9	2.6	2.3	51	181
TK-RS-042-033	42.4	33.7	2.6	2.6	51	141
TK-RS-048-042	48.3	42.4	2.6	2.6	64	140
TK-RS-060-048	60.3	48.3	2.9	2.6	76	111
TK-RS-076-060	76.1	60.3	2.9	2.9	89	97
TK-RS-088-076	88.9	76.1	3.2	2.9	89	83
TK-RS-114-088	114.3	88.9	3.6	3.2	102	71
TK-RS-139-114	139.7	114.3	4	3.6	127	65
TK-RS-168-139	168.3	139.7	4.5	4	140	60

code (AISI 321 steel)	Dz diameter [mm]	D1 diameter [mm]	T thickness [mm]	T1 thickness [mm]	L length [mm]	working pressure [bar]
TK-RS-026-021-SS	26.9	21.3	2.6	2	38	184
TK-RS-033-026-SS	33.7	26.9	2.6	2.3	51	168
TK-RS-042-033-SS	42.4	33.7	2.6	2.3	51	131
TK-RS-048-042-SS	48.3	42.4	2.6	2.6	64	130
TK-RS-060-048-SS	60.3	48.3	2.9	2.6	76	103
TK-RS-076-060-SS	76.1	60.3	2.9	2.9	89	91
TK-RS-088-076-SS	88.9	76.1	3.2	2.9	89	77
TK-RS-114-088-SS	114.3	88.9	3.6	3.2	102	66
TK-RS-139-114-SS	139.7	114.3	4	3.6	127	60
TK-RS-168-139-SS	168.3	139.7	4.5	4	140	55

## INDUSTRIAL HOSES - metal

### Metal hose assemblies designed for particular application - examples

	<p>DN75 hose assembly (hose TB-METALFLEX-M-075) in DN100 steam-heated jacket hose (TB-METALFLEX-M-100). Length 800 mm. Swivel flanges PN16 DN80 and DN20 (for steam) welded at the hose ends. Used in plastic processing.</p> <p>Medium: phthalic or maleic anhydride / steam. Working pressure: 3 bar / 9 bar. Internal temperature: +180°C / +180°C.</p>
	<p>DN25 hose assembly (hose TB-METALFLEX-M-025) with vulcanized silicone protective cover (AF-CFX-TAPE-SIL) that is easy to clean and protects the wire braid from dirt. Length 400 mm. PN16 DN25 flanges welded at the hose ends. Used in pharmaceutical industry.</p> <p>Medium: process steam. Working pressure: 4 bar. Internal temperature: +155°C.</p>
	<p>DN15 hose assembly (hose TB-PARNOR-015) with WH-GRI-PLOCK-304-045 hose applied as protective cover and additional steel cable protecting fittings from bursting from the hose. Length 3000 mm. Fittings with M26x1.5 female thread welded at the hose ends. Widely used to transfer gases.</p> <p>Medium: liquid CO<sub>2</sub>. Working pressure: 25 bar. Internal temperature: -25°C.</p>
	<p>DN6 hose assembly (hose TB-THP-006) designed to transfer oxygen with additional steel cable protecting fittings from bursting from the hose. Length 2000 mm. 11/16"-16 UNF LH male thread and one side and 3/8" BSP LH male thread fittings on the other side. Widely used to transfer dangerous gases.</p> <p>Medium: oxygen. Working pressure: 250 bar. External temperature: +80°C.</p>
	<p>DN100 hose assembly (hose TB-METALFLEX-M-100) with Nomex seal for electrical insulation. Length 3200 mm. Swivel flanges PN16 DN100 welded at the hose ends. Used for cooling systems in energetic industry.</p> <p>Medium: water. Working pressure: 6 bar. External temperature: +150°C.</p>

## General information about PTFE hoses

For over sixty years Polytetrafluoroethylene (PTFE, brand names: Tarflen, Teflon, Fluon) has been known and recognized for its unique properties. It is widely used in all branches of industry, including production of flexible hoses of various construction and application.

### PTFE unique properties:

- Excellent chemical resistance. It does not dissolve or swell in any of known solvents. It is resistant to highly aggressive acids and bases. Only very few, very rare substances (fluorine, boiling alkali metals, oxygen bifluoride, chlorine trifluoride) can affect PTFE.
- Wide range of thermal resistance. PTFE remains flexible even at the temperature of liquid helium (-269°C). Crystalline melting point of PTFE is +327°C, and at +415°C decomposition of PTFE takes place. Working temperature for hoses made of PTFE usually ranges from -70°C up to +260°C depending on the hose design (pressure and mechanical parameters of PTFE start to decrease when the temperature rises above +130°C).
- Resistance to ageing and weather conditions. PTFE is hydrophobic, entirely resistant to ozone, oxygen, light and UV radiation. Samples exposed for several dozen of years to diverse climate conditions have not shown any changes to PTFE properties.
- PTFE has a very low coefficient of friction (from 0.02 to 0.2) and a low value of surface energy. Therefore hoses made of PTFE have self-cleaning properties (substances do not stick to hose walls) so the transfer is very hygienic.
- Good electrical properties, high resistivity.
- Self-extinguishing properties.
- Moderate resistance to abrasion.

### Other materials similar to PTFE

Hoses can be manufactured not only from PTFE but also from PTFE copolymers. They usually feature high chemical and thermal resistance but other properties are slightly different in comparison to PTFE (better mechanical resistance, better processing qualities):

- FEP (teflon FEP, DuPont),
- PFA, MFA (teflon PFA, DuPont),
- ETFE (Tefzel, DuPont),
- ECTFE (Halar).

### Production and construction of PTFE hoses

Because of high viscosity even at temperatures close to thermal decomposition (+415°C), PTFE hoses are manufactured by extruding the compound of lubricant (paraffin oil) and PTFE powder.

### Types of PTFE hose construction:

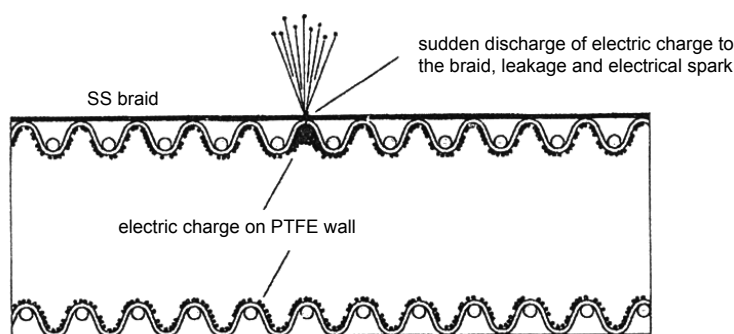
- Smooth and corrugated hoses with no braid. Used for low pressure applications. Translucent, PTFE wall allows the visual control of the flow.
- Smooth hoses with a single or double external braid made of stainless steel. Widely used for almost all media: chemicals, gases, steam, oils, lubricants, fuel, paint, adhesives, foodstuffs in all branches of industry. The combination of relatively high working pressure of the hoses (up to around 400 bar) and PTFE unique properties result in a universal and irreplaceable solution for recent industrial technology.
- Corrugated hoses with external braids made of stainless steel or different materials. Sometimes reinforced with a steel wire helix between PTFE and the external braid. Manufactured in various construction options with lower working pressure but higher flexibility than smooth bore hoses.
- Smooth bore hoses with an extruded PTFE liner with a textile braid, steel wire helix reinforcement and an external layer made of rubber. All layers are vulcanized and permanently integrated with the PTFE internal layer - as in a standard rubber hose. Used mainly in chemical industry.



## Static electricity - antistatic PTFE

As virgin PTFE is non-conductive and features high surface electrical resistivity ( $R = 10^{17} \Omega$ ), potential hazards connected with static electricity should always be carefully considered. If a transferred substance is a bad electrical conductor and has electrifying properties, an electrostatic charge builds up on the inside of PTFE layer. The higher the flow rate, the faster the buildup of charge. The charge may build up faster than it is discharged through PTFE to the other parts of the installation and to the ground. When voltage reaches the sufficient level a sudden discharge of electric charges occurs. It may progress as follows:

- discharge to the stainless steel braid causes a micro hole or a plasma arc (at high temperature) that may lead to a leakage and ignition of flammable substances,
- an electrical spark occurs on the hose surface that has enough energy to ignite a flammable substance,
- discharge to external parts or people who are handling the hose.



To avoid the problem of static electricity an antistatic version of PTFE (with addition of graphite) is used. This version enables lowering the resistance between the internal layer of the hose wall and the grounded steel fitting below  $10^8 \Omega$  and discharging the electric charges.

Antistatic version of PTFE hoses:

- standard version (tube made of antistatic PTFE) - electric charges are discharged to the braid and fittings,
- only internal layer of the tube is antistatic - electric charges are discharged along the internal layer to the hose ends.

## Electrical continuity within installation

Electrical continuity within installation is a notion completely different from antistatic properties of a hose. Electrical continuity is ensured if a direct electrical connection with the use of a conductor (copper wire, braid) is provided between fittings. Resistance measured between hose fittings should not exceed  $10 \Omega$ .

Media that require antistatic PTFE

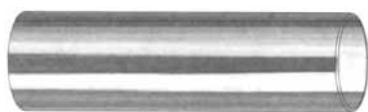
Substances such as: organic solvents (acetone, toluene, xylene), alcohol, fuel (automotive, aviation, heating oil), solids (powder, dust), steam and many more require antistatic PTFE hoses. Substances that do not require antistatic PTFE: non-organic products (salts, acids, alkalis), some alcohols, glycol, water, dry and pure gases, dry and pure steam.

## Antistatic PTFE for foodstuffs

Because many substances conveyed in food industry require antistatic PTFE, a special version of antistatic PTFE certified for foodstuffs is used.

**Application of different versions of PTFE should be always confirmed with Sales or Technical Department of TUBES INTERNATIONAL®.**

## INDUSTRIAL HOSES - PTFE



### SMTO

**Material:** PTFE  
**Working temp.:** From -60°C up to +260°C  
 Pressure correction factor:  
 0.8 from +40°C  
 0.6 from +100°C  
 0.2 from +150°C  
 0.1 from +200°C

Lightweight, translucent, smooth bore hose made of PTFE highly resistant to chemicals. Designed for low-pressure installations transferring chemicals, paint, oil, air, water and water-based fluids. Not suitable for pneumatic push-in fittings.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
ZC-SMTO-01X03	1	3	1	56	168	15	0.014
ZC-SMTO-02X04	2	4	1	27	81	20	0.022
ZC-SMTO-03X04	3	4	0.5	10	30	25	0.013
ZC-SMTO-03X05	3	5	1	22	66	25	0.029
ZC-SMTO-03X06	3	6	1.5	30	90	25	0.049
ZC-SMTO-04X06	4	6	1	18	54	30	0.037
ZC-SMTO-05X08	5	8	1.5	20	60	35	0.071
ZC-SMTO-06X08	6	8	1	14	42	40	0.051
ZC-SMTO-07X10	7	10	1.5	16	48	50	0.093
ZC-SMTO-08X10	8	10	1	12	36	60	0.066
ZC-SMTO-09X12	9	12	1.5	13	39	70	0.113
ZC-SMTO-10X12	10	12	1	10	30	90	0.080
ZC-SMTO-12X14	12	14	1	8	24	110	0.095
ZC-SMTO-12,5X15	12.5	15	1.25	9	27	130	0.120
ZC-SMTO-13X15	13	15	1	8	24	180	0.102
ZC-SMTO-14X16	14	16	1	7	21	250	0.109
ZC-SMTO-15X18	15	18	1.5	8	24	320	0.167
ZC-SMTO-20X22	20	22	1	3	9	700	0.152



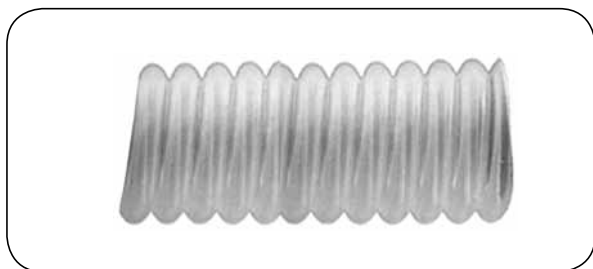
### FXTO

**Material:** PTFE  
**Working temp.:** From -70°C up to +260°C (working pressure depends on temperature)

Lightweight, translucent hose with smooth inside and corrugated outside PTFE. The construction combines properties of smooth hoses (ease of cleaning, uninterrupted flow) and high flexibility that is specific to corrugated hoses. An antistatic version is also available.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	weight [kg/m]
AF-FXTO-06	6.8	9	4	0.041
AF-FXTO-08	7.9	10	4	0.056
AF-FXTO-10	10	12.5	4	0.070
AF-FXTO-13	13.6	16.2	4	0.110
AF-FXTO-16	16.7	20	3	0.161
AF-FXTO-19	19.8	23.2	3	0.179
AF-FXTO-25	26.3	30.3	2	0.268

## INDUSTRIAL HOSES - PTFE

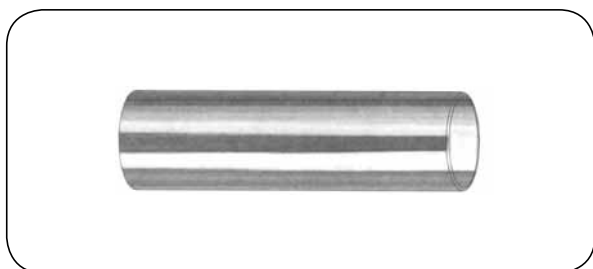


### VISIFLON TO

**Material:** Helically corrugated PTFE  
**Working temp.:** From -70°C up to +100°C

Lightweight, translucent hose made of helically corrugated PTFE. Extremely flexible. Resistant to full vacuum up to +80°C. An antistatic version is also available.

code	DN [inch]	flow diameter [mm]	O.D. [mm]	working pressure [bar]	bending radius [mm]	weight [kg/m]
AF-VFTO-10	3/8	6.3	10.7	4	25	0.06
AF-VFTO-13	1/2	9.5	14.1	4	38	0.08
AF-VFTO-16	5/8	12.7	19.8	4	50	0.13
AF-VFTO-19	3/4	16	21.2	3	75	0.17
AF-VFTO-25	1	22	29	3	89	0.24
AF-VFTO-32	1.1/4	28	34.2	2	100	0.34
AF-VFTO-38	1.1/2	35	45	2	150	0.42
AF-VFTO-50	2	47	59	2	200	0.63



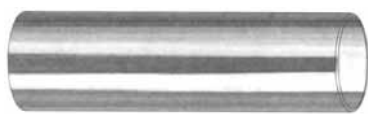
### VERSILON PTFE

**Material:** PTFE  
**Working temp.:** From -268°C up to +260°C

Lightweight, translucent hose with a smooth, non-porous surface. Excellent chemical resistance. It is not suitable for push-in fittings. Widely used in all branches of industry. Shore hardness (D) 58°, density 2.18. Safety factor 4:1. Hoses with inside diameter 2 ÷ 6 mm are available with 0.5 mm thick wall.

code	I.D. [mm]	tolerance [± mm]	wall thickness [mm]	tolerance [± mm]	working press. 20°C [bar]	bending radius [mm]	weight [g/m]
VE-CHEMPTFE-02X04	2	0.15	1	0.15	13.4	16	20.60
VE-CHEMPTFE-03X05	3	0.15	1	0.15	10.6	25	27.50
VE-CHEMPTFE-04X06	4	0.15	1	0.15	8.6	36	34.40
VE-CHEMPTFE-05X07	5	0.2	1	0.15	7.2	49	41.30
VE-CHEMPTFE-06X08	6	0.2	1	0.15	6.2	64	48.10
VE-CHEMPTFE-08X10	8	0.3	1	0.15	5	100	61.90
VE-CHEMPTFE-10X12	10	0.3	1	0.15	4.5	144	75.60
VE-CHEMPTFE-12X14	12	0.3	1	0.15	3.7	196	89.40
VE-CHEMPTFE-14X16	14	0.3	1	0.15	3.2	256	103.10
VE-CHEMPTFE-16X18	16	0.35	1	0.15	2.8	324	116.90
VE-CHEMPTFE-18X20	18	0.35	1	0.15	2.5	400	130.70

## INDUSTRIAL HOSES - PTFE



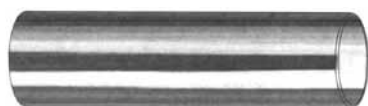
### VERSILON FEP

**Material:** FEP

**Working temp.:** From -73°C up to +204°C

Lightweight, translucent hose made of fluorinated ethylene propylene with excellent chemical resistance. It is not suitable for push-in fittings. Widely used in all branches of industry, labs, etc. Shore hardness (D) 55°, density 2.17. The hose compliant with FDA requirements can be supplied on request. Safety factor 3:1.

code	I.D. [mm]	tolerance [± mm]	wall thickness [mm]	tolerance [± mm]	working press. 20°C [bar]	bending radius [mm]	standard length [m]
VE-CHEMFEP-02X04	2	0.1	1	0.1	27	16	50
VE-CHEMFEP-04X06	4	0.1	1	0.1	18	36	50
VE-CHEMFEP-06X08	6	0.1	1	0.1	14	64	50
VE-CHEMFEP-08X10	8	0.1	1	0.1	11	100	50
VE-CHEMFEP-10X12	10	0.1	1	0.1	9	144	50
VE-CHEMFEP-12X14	12	0.1	1	0.1	8	196	50



### VERSILON PFA

**Material:** PFA

**Working temp.:** From -196°C up to +260°C

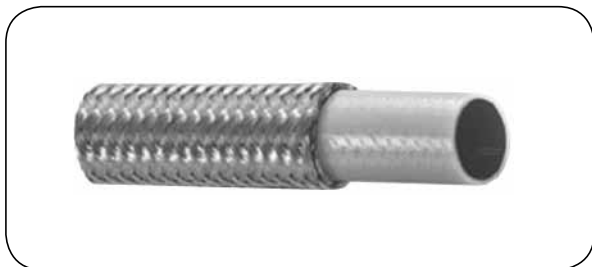
**Hardness:** 60 - 65° Shore (A)

**Density:** 2.17 g/cm<sup>3</sup>

Lightweight, translucent hose with a smooth, non-porous surface. Resistant to cracks caused by excessive stress. Excellent resistance to UV radiation. The hose compliant with FDA and USP Class VI standards (approval for use in pharmaceutical industry) can be supplied on request. Used in biomedical and pharmaceutical industry. Good insulating properties - suitable for electric cable insulation. Because of high plasticity, PFA is particularly recommended for industrial robots and installations that are prone to vibration.

code	I.D. [mm]	tolerance [± mm]	wall thickness [mm]	tolerance [± mm]	working press. 20°C [bar]	bending radius [mm]	standard length [m]
VE-CHEMPFA-02X03	2	0.1	0.5	0.1	18	18	50
VE-CHEMPFA-02X04	2	0.1	1	0.1	27	16	50
VE-CHEMPFA-03X06	3	0.1	1.5	0.1	27	24	50
VE-CHEMPFA-04X06	4	0.1	1	0.1	18	36	50
VE-CHEMPFA-06X08	6	0.1	1	0.1	13.5	64	50
VE-CHEMPFA-08X10	8	0.1	1	0.1	10.8	100	50
VE-CHEMPFA-09X12	9	0.1	1.5	0.1	13.5	96	50
VE-CHEMPFA-10X12	10	0.2	1	0.2	9	144	50

## INDUSTRIAL HOSES - PTFE

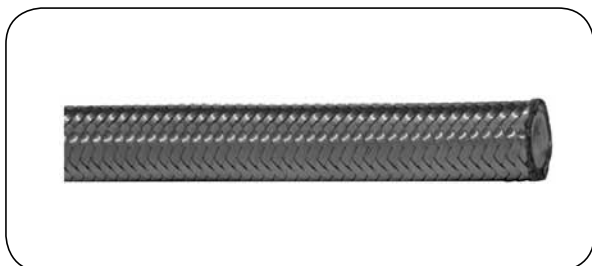


### CHEMFLUOR TH

**Internal layer:** Black, conductive PTFE  
**Reinforcement:** AISI 304 stainless steel braid  
**Working temp.:** From -50°C up to +200°C

Flexible, PTFE hose designed for high pressure hydraulic, pneumatic and gas installations. The internal layer, made of conductive PTFE, prevents the build-up of electrostatic charges. Available as complete hose assemblies with fittings according to customer specification.

code	I.D. [mm]	O.D. [mm]	working press. 20°C [bar]	bursting press. 20°C/200°C [bar]	bending radius [mm]	maximum length [m]
VE-1704TH000	5.6	9.5	345	1100/820	38	12
VE-1706TH000	7.8	12	345	1100/820	64	10.5
VE-1708TH000	10.2	15.2	345	1100/820	73	10.5
VE-1710TH000	12.6	18	345	1100/820	83	10.5
VE-1712TH000	15.7	24.6	345	1100/820	102	10.5
VE-1716TH000	22	31.8	345	1100/820	127	10.5



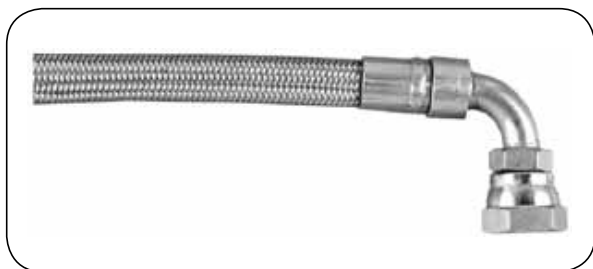
### PRESSURE FLEX

**Material:** PTFE  
**Reinforcement:** Double aramid braid,  
 AISI 304 steel braid  
**Working temp.:** From -60°C up to +260°C

Flexible, PTFE hose designed for high pressure hydraulic and gas installations. Lightweight, with a very small bending radius and small external diameter. Meets the requirements of SAE 100 R14 standard. For temperature above +150°C, working pressure depends on temperature - contact Sales or Technical Department of TUBES INTERNATIONAL®.

code	DN [inch]	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]
KA-PFLEX-06	1/4	6.2	12.3	485	1940	38
KA-PFLEX-08	5/16	8.1	14.2	450	1800	47
KA-PFLEX-10	3/8	9.5	16	430	1750	64
KA-PFLEX-12	1/2	12.2	19	425	1700	74
KA-PFLEX-15	5/8	15.1	22	360	1450	90
KA-PFLEX-20	3/4	20	27.5	275	1100	180
KA-PFLEX-23	1	23	31.8	250	1000	200

# INDUSTRIAL HOSES - PTFE



## SMOOTHBORE

**Material:** PTFE  
**Reinforcement:** Single or double AISI 304 stainless steel braid  
**Working temp.:** From -70°C up to +260°C (working pressure depends on temperature)

**Characteristics:** The internal layer made of seamless extruded, premium grade of PTFE that ensures minimum porosity, maximum flexibility and high resistance to vibration. The braid made of heat treated, AISI 304 stainless steel wire (tensile strength: 1700 MPa). There are several SMOOTHBORE versions available: standard or heavy wall, with a single or double braid (see tables below). Heavy wall is recommended for heavy-duty applications, gases (up to 150 bar) and applications with cyclic, rapid temperature changes. Double braid version is designed for high working pressure and applications where kink resistance is required as the hose undergoes constant bending.

**For temperatures above +130°C reduce the maximum working pressure given in the tables by 0.75% for each 1°C of temperature rise above +130°C.**

**Example: at +170°C temperature, maximum working pressure for AF-SWSB-08 hose is:**  
 $260 \text{ bar} - (170^\circ\text{C} - 130^\circ\text{C}) \times 0.75 = 260 \text{ bar} - 30\% = 182 \text{ bar}.$

**Safety factor 3:1.**

**Applications:** Due to the unique properties of PTFE (wide temperature range, excellent chemical resistance, non-stick surface), widely used to transfer chemicals, foodstuffs, fuels, oils, paints, solvents, adhesives, detergents, inks, steam, etc.

### SWSB (standard wall, single braid)

code*	I.D.			O.D.		bending radius [mm]	working pressure [bar]	weight [kg/m]
	nominal [inch]	minimum [mm]	maximum [mm]	minimum [mm]	maximum [mm]			
AF-SWSB-06	1/4	6	6.5	8.3	8.7	60	280	0.09
AF-SWSB-08	5/16	7.5	8	9.8	10.5	70	260	0.11
AF-SWSB-10	3/8	9.1	9.6	11.5	12	80	220	0.12
AF-SWSB-13	1/2	11.9	12.8	14.5	15.4	110	155	0.21
AF-SWSB-16	5/8	15	16	17.8	18.9	150	120	0.26
AF-SWSB-19	3/4	18	19.2	21	22.3	200	100	0.32
AF-SWSB-25	1	24	25.4	27.6	28.7	300	80	0.43

\* code example of an antistatic version: AF-SWSB-06AS

### HWSB (heavy wall, single braid)

code*	I.D.			O.D.		bending radius [mm]	working pressure [bar]	weight [kg/m]
	nominal [inch]	minimum [mm]	maximum [mm]	minimum [mm]	maximum [mm]			
AF-HWSB-03	1/8	3	3.2	6	6.2	20	350	0.07
AF-HWSB-05	3/16	4.5	4.8	7.5	7.8	29	320	0.09
AF-HWSB-06	1/4	6	6.5	9	9.5	30	250	0.11
AF-HWSB-08	5/16	7.5	8	10.5	11.3	40	240	0.14
AF-HWSB-10	3/8	9.1	9.6	12.2	12.8	55	200	0.15
AF-HWSB-13	1/2	11.9	12.8	15.1	16.1	85	150	0.24
AF-HWSB-16	5/8	15	16	18.5	19.7	110	120	0.29
AF-HWSB-19	3/4	18	19.2	21.4	22.7	145	100	0.34
AF-HWSB-25	1	24	25.4	28.1	29.5	260	80	0.47

\* code example of an antistatic version: AF-HWSB-06AS

# INDUSTRIAL HOSES - PTFE

## SWDB (standard wall, double braid)

code*	I.D.			O.D.		bending radius [mm]	working pressure [bar]	weight [kg/m]
	nominal [inch]	minimum [mm]	maximum [mm]	minimum [mm]	maximum [mm]			
AF-SWDB-03	1/8	3	3.2	6.8	6.9	20	380	0.10
AF-SWDB-05	3/16	4.6	4.75	8.6	8.8	30	350	0.14
AF-SWDB-06	1/4	6	6.5	9.9	10.2	40	310	0.16
AF-SWDB-08	5/16	7.5	8	11.3	11.8	50	300	0.19
AF-SWDB-10	3/8	9.1	9.6	13.2	13.5	60	250	0.21
AF-SWDB-13	1/2	11.9	12.8	16	16.8	90	200	0.34
AF-SWDB-16	5/8	15	16	19.5	20.4	130	150	0.42
AF-SWDB-19	3/4	18	19.2	22.6	23.6	170	120	0.50
AF-SWDB-25	1	24	25.4	29	30.2	270	90	0.70

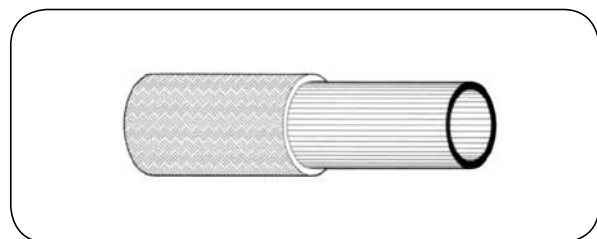
\* code example of an antistatic version: AF-SWDB-06AS

## HWDB (heavy wall, double braid)

code*	I.D.			O.D.		bending radius [mm]	working pressure [bar]	weight [kg/m]
	nominal [inch]	minimum [mm]	maximum [mm]	minimum [mm]	maximum [mm]			
AF-HWDB-03	1/8	3	3.2	7	7.1	18	370	0.11
AF-HWDB-05	3/16	4.5	4.8	8.8	9	25	340	0.14
AF-HWDB-06	1/4	6	6.5	10.6	10.9	26	300	0.18
AF-HWDB-08	5/16	7.5	8	12.1	12.6	35	290	0.21
AF-HWDB-10	3/8	9.1	9.6	13.9	14.3	50	240	0.24
AF-HWDB-13	1/2	11.9	12.8	16.5	17.3	75	190	0.37
AF-HWDB-16	5/8	15	16	20.3	21.2	100	150	0.45
AF-HWDB-19	3/4	18	19.2	23.3	24.3	135	120	0.53
AF-HWDB-25	1	24	25.4	30.2	31.2	250	90	0.73
AF-HWDB-32	1.1/4	30.4	32	36.3	37.5	400	80	0.95
AF-HWDB-38	1.1/2	36.2	38	42.8	44.7	800	65	1.17
AF-HWDB-51	2	48.8	50.8	55.4	57.4	1200	40	1.61

\* code example of an antistatic version: AF-HWDB-06AS

## SMOOTHBORE hose versions



### AS - antistatic

Special additives reduce inherent, high resistance of PTFE meeting the requirements of ISO 8031 Annex A. The electrical resistance between an end fitting and an internal hose layer should not exceed  $10^8 \Omega$ . One of the end fittings must be grounded.



### HPG - high pressure gases

Hose designed for gases with the pressure above 140 bar. Hose wall is made of specially processed PTFE. See „INDUSTRIAL HOSES - technical gas”

## INDUSTRIAL HOSES - PTFE

### SMOOTHBORE hose versions



#### Other braid materials

SMOOTHBORE hoses can be supplied with braids (standard or additional) made of AISI 316 stainless steel, Monel, Kevlar, Nomex, polyester or fibreglass.



#### Additional hose covers

For braid protection or for the ease of cleaning, hoses can be supplied with additional external covers made of Hytrel, PVC, polyolefin, polyamide or various kinds of rubber. The covers can be labelled with a brand name, working pressure, etc.



#### SMOOTHBORE hose fittings

Standard SMOOTHBORE hose fittings: BSP (straight) female thread (cone 60°) or BSPT male thread, made of zinc-plated steel or AISI 316. Other fittings such as metric, JIC, NPT, flanges, pipe ends, DIN 11851, SMS, TRICLOVER, and many more can be used as well.

TUBES INTERNATIONAL® produces a hose assembly according to customer specifications (length, diameter, type of fittings) on request.



### AX 1603

**Material:** PTFE

**External layer:** Steel wire / textile braid

Lightweight, flexible hose designed for steam. Used in ironing machines, rinsers, coffee machines, etc.

code	I.D. [inch]	O.D. [inch]	wall thickness [mm]	bending radius [mm]	working pressure [bar]	bursting pressure [bar]
AX-1603	3/16	5/16	0.76	63.50	287	862



## INDUSTRIAL HOSES - PTFE



### HYPERLINE SB (HYDRAFLON)

**Material:** PTFE  
**Reinforcement:** Single or double AISI 304 stainless steel braid  
**Working temp.:** From -70°C up to +260°C (working pressure depends on temperature)

**Characteristics:** The internal layer made of seamless extruded, premium grade PTFE that ensures minimum porosity, maximum flexibility and high resistance to vibration. The braid made of heat treated AISI 304 stainless steel wire (tensile strength: 1700 MPa). HYPERLINE hose is a version of SMOOTHBORE hose, however its wall is medium thick and inside diameter suitable for standard hydraulic fittings. Supplied with a single braid as a standard (double braid on special request).

**For temperatures above +130°C reduce the maximum working pressure given in the tables by 0.75% for each 1°C of temperature rise above +130°C.**

**Example: at +170°C temperature, maximum working pressure for AF-HDSB-05 hose is:**  
 $320 \text{ bar} - (170^\circ\text{C} - 130^\circ\text{C}) \times 0.75 = 320 \text{ bar} - 30\% = 224 \text{ bar}.$

**Safety factor 3:1.**

**Applications:** Due to the unique properties of PTFE (wide temperature range, excellent chemical resistance, non-stick surface), widely used to transfer chemicals, foodstuffs, fuels, oils, paints, solvents, adhesives, detergents, inks, steam, etc.

#### HYPERLINE SB (medium wall, single braid)

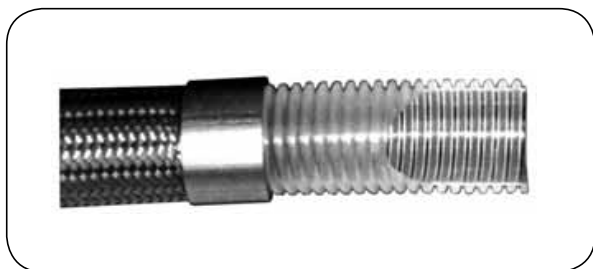
code*	I.D.		O.D. [mm]	working pressure [bar]	bending radius [mm]	weight [kg/m]
	[inch]	[mm]				
AF-HDSB-03	1/8	3.5	6.45	350	20	0.07
AF-HDSB-05	3/16	5	7.65	320	45	0.08
AF-HDSB-06	1/4	6.7	9.3	240	60	0.11
AF-HDSB-08	5/16	8.5	11.1	220	70	0.14
AF-HDSB-10	3/8	10	12.75	190	80	0.17
AF-HDSB-13	1/2	13.6	16.35	150	130	0.21
AF-HDSB-16	5/8	16.6	19.5	130	163	0.28
AF-HDSB-19	3/4	19.8	22.5	110	180	0.33
AF-HDSB-25	1	26.4	30.1	80	230	0.52

\* code example of an antistatic version: AF-HDSB-06AS

Standard fittings for HYPERLINE SB: Z type fittings (see: HIGH PRESSURE).

TUBES INTERNATIONAL® produces hose assemblies according to customer specification (length, diameter, fitting type) on request.

## INDUSTRIAL HOSES - PTFE



### HYPERLINE FX

**Material:** Smooth inside, corrugated outside PTFE  
**Reinforcement:** Single AISI 304 braid (SS version) or aramid braid (AM version)  
**Working temp.:** From -70°C up to +260°C - AM version up to +180°C (working pressure depends on temperature)

**Characteristics:** HYPERLINE FX is made of PTFE which is smooth on the inside but corrugated one on the outside. The construction combines properties of smooth hoses (ease of cleaning, uninterrupted flow) and high flexibility that is specific to corrugated hoses. HYPERLINE FX SS is resistant to full vacuum up to +130°C.

**For temperatures above +160°C for FXSS and +130°C for FXAM reduce the maximum working pressure given in the tables by 1% for each 1°C of temperature rise. Example: at +170°C temperature, maximum working pressure for AF-FXSS-10 hose is:**  
 $80 \text{ bar} - (170^\circ\text{C} - 160^\circ\text{C}) \times 1 = 80 \text{ bar} - 10\% = 72 \text{ bar}.$

**Applications:** HYPERLINE FX is recommended for all industrial applications demanding high flow rates, resistance to chemicals, temperature and permeation. Widely used in automotive industry (fuel installations, oil lines), refrigeration, steam and gas lines. Not suitable when PTFE lined fittings are required (BIOFLEX hose is then recommended).

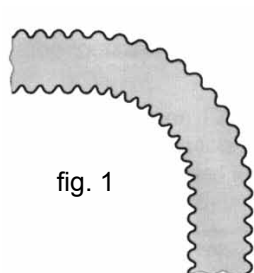


fig. 1

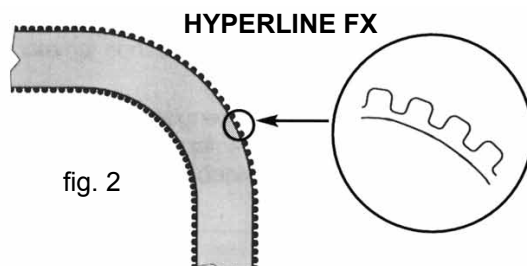


fig. 2

A difference in construction between a standard PTFE corrugated hose (fig.1) and HYPERLINE FX (fig.2).

On special request, HYPERLINE is available with a braid made of different materials, e.g. polypropylene. HYPERLINE can be also supplied in 304 steel braid and additional cover made of EPDM rubber, silicone rubber, PVC, nylon or other material.

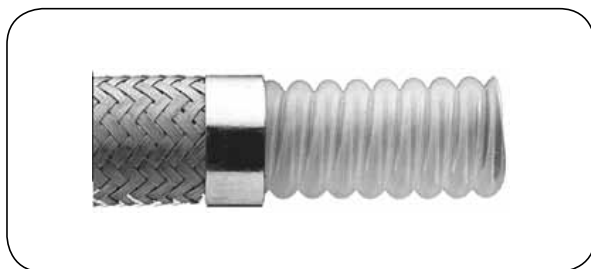
code (SS version)	code (AM version)	I.D. [mm]	O.D. (SS version) [mm]	O.D. (AM version) [mm]	working pressure SS/AM [bar]	bending radius SS/AM [mm]
AF-FXSS-06	AF-FXAM-06	6.8	9.6	9.6	88/62	19/38
AF-FXSS-08	AF-FXAM-08	7.9	10.6	10.6	84/59	19/38
AF-FXSS-10	AF-FXAM-10	10	13.5	13.5	80/56	25/50
AF-FXSS-13	AF-FXAM-13	13.6	17.5	17.5	60/42	38/76
AF-FXSS-16	AF-FXAM-16	16.7	21.4	21.4	50/35	50/100
AF-FXSS-19	AF-FXAM-19	19.8	24.2	24.2	42/29	63/126
AF-FXSS-25	AF-FXAM-25	26.4	31.7	31.7	40/28	75/150

note: for an antistatic version add "AS" at the end of the code

Z type fittings (see chapter HIGH PRESSURE) are used as a standard for HYDRALINE FX hose.

TUBES INTERNATIONAL® supplies hose assemblies according to customer specification (length, diameter, fitting type) on request.

# INDUSTRIAL HOSES - PTFE



## HYPERLINE V (VISIFLON)

**Material:** Helically corrugated PTFE  
**Reinforcement:** AISI 304 braid (SS version)  
 Polypropylene braid (PB version)  
 No braid (TO version)  
**Working temp.:** From -70°C up to +230°C (SS version)  
 From -30°C up to +100°C (PB version)  
 From -70°C up to +100°C (TO version)

**Characteristics:** The internal layer is made of corrugated, premium grade PTFE which ensures excellent flexibility and resistance to vibrations. A braid in SS version is made of AISI 304 annealed stainless steel wire. PB version with a braid made of orange polypropylene fibre is lightweight and highly resistant to chemicals. The maximum working pressure is 50% of the maximum working pressure of SS version. TO version has no braid, is very lightweight and enables visual control of the medium flow. The maximum working pressure is 2 bar. All versions are available as antistatic (AS), resistance  $R < 10^8 \Omega$  according to ISO 8031 Annex A. HYPERLINE V SS is resistant to full vacuum up to +130°C temperature (TO and PB up to +80°C).

**For temperatures above +130°C reduce the maximum working pressure given in the tables by 1% for each 1°C of temperature rise. For PB version by 5% for each 1°C above +80°C. Example: at +170°C temperature, maximum working pressure for AF-VFSS-10 is:**  
 $60 \text{ bar} - (170^\circ\text{C} - 130^\circ\text{C}) \times 1 = 60 \text{ bar} - 40\% = 36 \text{ bar}$

**Safety factor 4:1.**

**Applications:** Due to the unique properties of PTFE (wide temperature range, excellent chemical resistance, non-stick surface), widely used to transfer chemicals, foodstuffs, fuels, oils, paints, solvents, adhesives, detergents, inks, steam, etc.

### HYPERLINE V (AISI 304 steel braid)

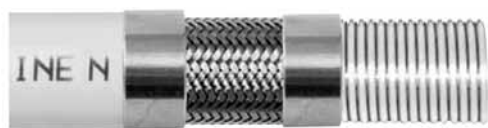
code*	DN [inch]	DN [mm]	O.D. [mm]	working pressure [bar]	bending radius [mm]	weight [kg/m]	maximum length [m]
AF-VFSS-10	3/8	6.3	11.95	60	19	0.13	40
AF-VFSS-13	1/2	9.5	15.25	47	25	0.20	40
AF-VFSS-16	5/8	12.7	21.2	40	38	0.25	30
AF-VFSS-19	3/4	16	22.7	32	50	0.34	30
AF-VFSS-25	1	22.2	30.6	26	63	0.47	25
AF-VFSS-32	1.1/4	28.2	36	25	75	0.63	20
AF-VFSS-38	1.1/2	35	47	20	115	0.90	10
AF-VFSS-50	2	47	61	15	130	1.25	10

\* code example of an antistatic version: AF-VFSS-10AS, code example of PB version: AF-VFPB-10

Standard HYPERLINE V hose fittings: BSP female fittings with cone 60° and BSPT male fittings, made of zinc-plated steel, AISI 316 steel or polypropylene. Other fittings can also be used e.g. metric, JIC, NPT, flange, pipe, DIN 11851, SMS, TRICLOVER in straight, 45° or 90° option.

TUBES INTERNATIONAL® produces hose assemblies according to customer specification (length, diameter, fitting type) on request.

## INDUSTRIAL HOSES - PTFE



### PHARMALINE N

**Material:** Smooth inside, corrugated outside PTFE  
**Reinforcement:** AISI 316 stainless steel braid  
 (from 1/2" additional AISI 316 steel helix)  
**External layer:** White silicone  
**Working temp.:** From -73°C up to +204°C (working pressure depends on temperature)

**Characteristics:** PHARMALINE hose is made of smooth inside and corrugated outside PTFE. The construction combines properties of smooth hoses (ease of cleaning, uninterrupted flow) and high flexibility that is specific to corrugated hoses. It is a lighter version of BIOFLEX hose, designed for traditional fitting-hose connection (crimping by a ferrule) as well as for RELINK reusable fittings. Hoses in all diameters are resistant to full vacuum up to 140°C.

A standard PHARMALINE N hose in GP version has the internal layer made of PTFE in accordance with FDA No. 21 CFR 177.1550 standard. An antistatic version (AS) is also available - compliant with FDA No. 21 CFR 178.3297 standard. Both GP and GP AS hoses have been tested and they both conform to the requirements of USP Class VI. The material of the external layer- platinum cured white silicone rubber is compliant with USP Class VI and with FDA CFR-177-2600 standards. PHARMALINE N hose can be optionally manufactured in accordance with ATEX directive and adequately labelled according 94/9/EC Directive.

**For temperatures above +130°C reduce the maximum working pressure given in the tables by 1% for each 1°C of temperature rise above +130°C. Example: at +170°C temperature, maximum working pressure for AF-PHGP-N-10 is:**

$$100 \text{ bar} - (170^\circ\text{C} - 130^\circ\text{C}) \times 1 = 100 \text{ bar} - 40\% = 60 \text{ bar}$$

**Safety factor 4:1.**

**Applications:** PHARMALINE N hose is designed for transfer applications in high purity conditions both inside and outside the hose. It is widely used in pharmaceutical, biotech, chemical and food industry. Excellent for other industrial applications, particularly those where hot medium is transferred, posing potential burn hazard due to accidental, direct contact with the hose. For example hot oil or steam transfer. Unlike silicone hoses, PHARMALINEN can undergo countless steam sterilization without the risk of degradation of the hose and/or adverse changes in its material.

#### PHARMALINE N - standard GP version

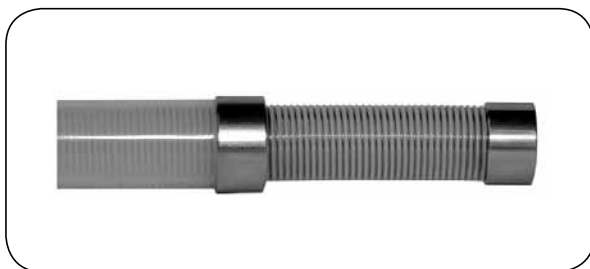
code	DN [mm]	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	maximum length [m]
AF-PHGP-N-06	6.4	6.8	11.6	80	320	19	0.17	30
AF-PHGP-N-10	9.5	9.5	15.5	70	280	25	0.22	30
AF-PHGP-N-13	12.7	13.5	21.4	60	240	38	0.37	30
AF-PHGP-N-16	16	16.5	25.2	50	200	50	0.52	30
AF-PHGP-N-19	19	19.8	28.5	45	180	63	0.65	30
AF-PHGP-N-25	25.4	26.1	37	40	160	100	0.88	30
AF-PHGP-N-32	32	32.5	44.6	35	140	130	1.30	30
AF-PHGP-N-38	38	38.8	51.7	30	120	170	1.70	30
AF-PHGP-N-50	50	51.5	65.6	28	112	210	2.36	30

note: for an antistatic version add "AS" at the end of the code

PHARMALINE N PTFE hoses are used with AF-PHX series fittings (e.g. AF-PHXTC - TRICLOVER fittings) and AF-BFXT3 series crimp ferrules. PHARMALINE N hoses can be also used with AF-T series fittings (for more - check „Fittings for PHARMALINE N and PHARMALINE X“).

TUBES INTERNATIONAL® produces hose assemblies according to customer specification (length, diameter, fitting type) on request.

## INDUSTRIAL HOSES - PTFE



### PHARMALINE X

**Material:** Smooth inside, corrugated outside PTFE  
**Reinforcement:** From 1/2" AISI 316 steel wire helix  
**External layer:** Transparent silicone  
**Working temp.:** From -73°C up to +204°C (working pressure depends on temperature)

**Characteristics:** PHARMALINE X hose is made of smooth inside and corrugated outside PTFE. The construction combines the properties of smooth hoses (ease of cleaning, uninterrupted flow) and high flexibility that is specific to corrugated hoses. It is a lighter version of PHARMALINE N hose, designed for traditional fitting-hose connection. Hoses in all diameters are resistant to full vacuum up to +140°C. A standard PHARMALINE X hose, GP version has the internal layer made of PTFE according to the requirements of FDA 21 CFR 177.1550 standard. An antistatic version, marked AS, is also available, made in accordance with FDA 21 CFR 178.3297 standard. Both GP and GP AS hoses were tested and they both conform to the requirements of USP Class VI. The material of the external layer- platinum cured white silicone rubber is compliant with USP Class VI. PHARMALINE X hose can be optionally manufactured in accordance with ATEX directive and adequately labeled - Directive 94/9/EC.

**For temperatures above +130°C reduce the maximum working pressure given in the tables by 1% for each 1°C of temperature rise above +130°C.**

**Example: at +170°C temperature, maximum working pressure for AF-PHGP-X-10 is:**  
 $6 \text{ bar} - (170^\circ\text{C} - 130^\circ\text{C}) \times 1 = 6 \text{ bar} - 40\% = 3.6 \text{ bar}$

**Safety factor 4:1.**

**Applications:** PHARMALINE X hose is designed for transfer applications in high purity conditions both inside and outside the hose. It is widely used in pharmaceutical, biotech, chemical and food industry. As an alternative to silicone hoses it allows for visual control of a medium in the hose, but it is significantly more resistant to numerous chemicals and temperature. Unlike silicone hoses, PHARMALINE X can undergo countless steam sterilization without the risk of degradation of the hose and/or adverse changes in its material.

code	DN [mm]	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	maximum length [m]
AF-PHGP-X-06	6.4	6.8	11.6	7.5	30	30	0.09	30
AF-PHGP-X-10	9.5	9.5	15.5	6	24	38	0.14	30
AF-PHGP-X-13	12.7	13.5	21.4	5.8	23	60	0.32	30
AF-PHGP-X-16	16	16.5	25.2	5	20	64	0.29	30
AF-PHGP-X-19	19	19.8	28.5	5	20	75	0.55	30
AF-PHGP-X-25	25.4	26.1	37	4	16	110	0.81	30
AF-PHGP-X-32	32	32.5	44.6	3	12	120	0.75	30
AF-PHGP-X-38	38	38.8	51.7	2	8	180	1.11	30
AF-PHGP-X-50	50	51.5	65.6	2	8	300	1.91	30

note: for an antistatic version add "AS" at the end of the code

PHARMALINE X PTFE hoses are used with AF-PHX series fittings (e.g. AF-PHXTC - TRICLOVER fittings) and AF-BFXT3 series crimp ferrules. PHARMALINE X hoses can be also used with AF-T series fittings (for more - check „Fittings for PHARMALINE N and PHARMALINE X“).

TUBES INTERNATIONAL® produces hose assemblies according to customer specification (length, diameter, fitting type) on request.

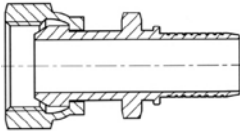
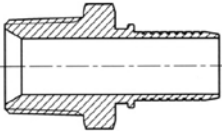
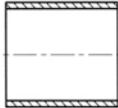
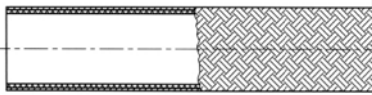
# INDUSTRIAL HOSES - PTFE

## Fittings and ferrules for SMOOTHBORE and HYPERLINE V

SMOOTHBORE and HYPERLINE V (VISIFLON) hoses are used with fittings and ferrules from AF-T series. Diameters and tails of the fittings are adjusted to these hoses. The ferrules (tube shaped) are crimped using special crimping dies. The end part of HYPERLINE V hose in which a fitting will be inserted, must be de-convoluted by using a special tool and only then crimped.

AF-TBW110, AF-TBZ130 fittings are made of zinc-plated carbon steel or AISI 316 stainless steel; AF-T1, T2 and T3 ferrules are made of zinc-plated carbon steel or AISI 304 (303) stainless steel.

Other fittings e.g. metric, 45°, 90° or made of different materials (polypropylene or PTFE) are available on request.

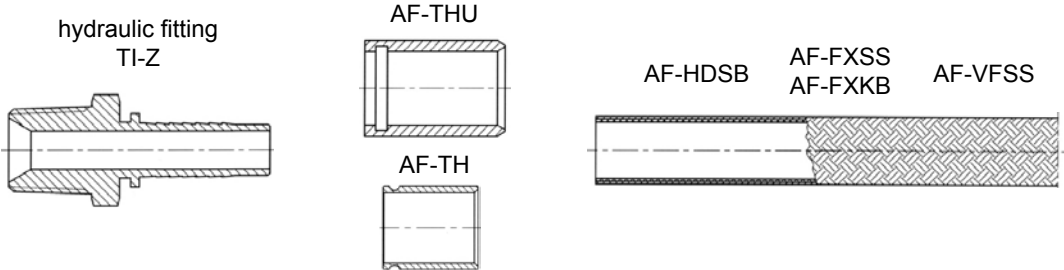
AF-TBW110		AF-TBZ130	AF-T1 AF-T2 AF-T3	AF-SWSB AF-SWDB	AF-HWSB AF-HWDB	AF-VFSS AF-VFPB
						
code - BSP female, 60° cone		code - BSPT male		thread size [inch]	hose I.D. [inch]	
(carbon steel)	(AISI 316)	(carbon steel)	(AISI 316)			
AF-TBW110-02-02	AF-TBW110-02-02-SS	AF-TBZ130-02-02	AF-TBZ130-02-02-SS	1/8	1/8	
AF-TBW110-04-04	AF-TBW110-04-04-SS	AF-TBZ130-04-04	AF-TBZ130-04-04-SS	1/4	1/4	
AF-TBW110-06-06	AF-TBW110-06-06-SS	AF-TBZ130-06-06	AF-TBZ130-06-06-SS	3/8	3/8	
AF-TBW110-08-08	AF-TBW110-08-08-SS	AF-TBZ130-08-08	AF-TBZ130-08-08-SS	1/2	1/2	
AF-TBW110-12-12	AF-TBW110-12-12-SS	AF-TBZ130-12-12	AF-TBZ130-12-12-SS	3/4	3/4	
AF-TBW110-16-16	AF-TBW110-16-16-SS	AF-TBZ130-16-16	AF-TBZ130-16-16-SS	1	1	
AF-TBW110-20-20	AF-TBW110-20-20-SS	AF-TBZ130-20-20	AF-TBZ130-20-20-SS	1.1/4	1.1/4	
AF-TBW110-24-24	AF-TBW110-24-24-SS	AF-TBZ130-24-24	AF-TBZ130-24-24-SS	1.1/2	1.1/2	
AF-TBW110-32-32	AF-TBW110-32-32-SS	AF-TBZ130-32-32	AF-TBZ130-32-32-SS	2	2	

code (carbon steel)	code (AISI 304/303)	hose I.D. [inch]	hose type
AF-T1-02	AF-T1-02-SS	1/8	HWSB
AF-T1-03	AF-T1-03-SS	3/16	HWSB, (HWDB 1/8")
AF-T1-04	AF-T1-04-SS	1/4	SWSB, HWSB
AF-T2-04	AF-T2-04-SS	1/4	SWDB, (HWSB-5/16")
AF-T1-05	AF-T1-05-SS	5/16	SWSB, (HWDB-3/16")
AF-T1-06	AF-T1-06-SS	3/8	SWSB, HWSB, VFSS, (HWDB-1/4", SWDB-5/16")
AF-T2-06	AF-T2-06-SS	3/8	SWDB, VFPB, (HWDB-5/16")
AF-T1-08	AF-T1-08-SS	1/2	SWSB, HWSB, VFSS, (HWDB-3/8")
AF-T2-08	AF-T2-08-SS	1/2	SWDB, HWDB, VFPB
AF-T1-10	AF-T1-10-SS	5/8	SWSB, HWSB, VFSS
AF-T2-10	AF-T2-10-SS	5/8	SWDB, HWDB, VFPB
AF-T1-12	AF-T1-12-SS	3/4	SWSB, HWSB
AF-T2-12	AF-T2-12-SS	3/4	SWDB, VFSS
AF-T3-12	AF-T3-12-SS	3/4	HWDB, VFPB
AF-T1-16	AF-T1-16-SS	1	SWSB
AF-T2-16	AF-T2-16-SS	1	HWSB, SWDB, VFSS
AF-T3-16	AF-T3-16-SS	1	HWDB, VFPB
AF-T2-20	AF-T2-20-SS	1.1/4	HWDB, VFSS
AF-T3-20	AF-T3-20-SS	1.1/4	VFPB
AF-T2-24	AF-T2-24-SS	1.1/2	HWDB, VFSS
AF-T3-24	AF-T3-24-SS	1.1/2	VFPB
AF-T2-32	AF-T2-32-SS	2	HWDB, VFSS
AF-T3-32	AF-T3-32-SS	2	VFPB

# INDUSTRIAL HOSES - PTFE

## Fittings and ferrules for HYPERLINE SB, FX, V

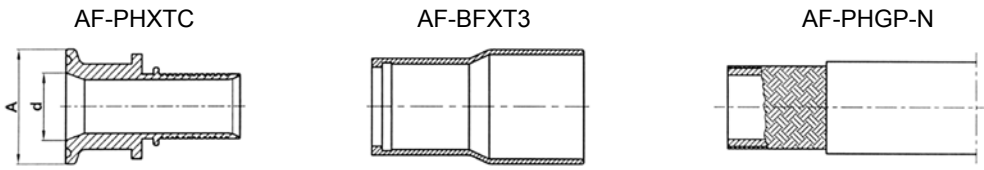
HYPERLINE SB, HYPERLINE FX and HYPERLINE V hoses require standard hydraulic fittings TI-Z type (e.g. TI-ZBW110-08-08), see „HIGH PRESSURE” chapter, and ferrules from series AF-TH and AF-THU. The ferrules are crimped with standard crimping dies. The corrugated part of HYPERLINE V hose in which a fitting will be inserted, must be de-convoluted using a special tool and only then crimped.

					
code (carbon steel)	code (carbon steel)	code (AISI 304/303)	code (AISI 304/303)	hose I.D. [inch]	hose type
AF-THU-03	AF-TH-03	AF-THU-03-SS	AF-TH-03-SS	3/16	HDSB
AF-THU-04	AF-TH-04	AF-THU-04-SS	AF-TH-04-SS	1/4	HDSB, FXSS, FXKB
AF-THU-05	AF-TH-05	AF-THU-05-SS	AF-TH-05-SS	5/16	HDSB
AF-THU-06	AF-TH-06	AF-THU-06-SS	AF-TH-06-SS	3/8	HDSB, FXSS, FXKB, VFSS
AF-THU-08	AF-TH-08	AF-THU-08-SS	AF-TH-08-SS	1/2	HDSB, FXSS, FXKB, VFSS
AF-THU-10	AF-TH-10	AF-THU-10-SS	AF-TH-10-SS	5/8	HDSB, FXSS, FXKB, VFSS
AF-THU-12	AF-TH-12	AF-THU-12-SS	AF-TH-12-SS	3/4	HDSB, FXSS*, FXKB*, VFSS
AF-THU-16	AF-TH-16	AF-THU-16-SS	AF-TH-16-SS	1	HDSB, FXSS, FXKB, VFSS
-	AF-TH-20	-	AF-TH-20-SS	1.1/4	VFSS
-	AF-TH-24	-	AF-TH-24-SS	1.1/2	VFSS
-	AF-TH-32	-	AF-TH-32-SS	2	VFSS

\* - only AF-THU ferrules

## Fittings for PHARMALINE N and PHARMALINE X

PHARMALINE N and PHARMALINE X PTFE hoses are used with fittings from AF-PHX series (e.g. AF-PHXTC - TRICLOVER fittings) and crimp ferrules from AF-BFXT3 series (the same as for BIOFLEX and CORROLINE PLUS hoses). The tail of AF-PHX fittings is hygienic which means that the tail is slightly tapered at the very end of the fitting and internally polished up to  $Ra = 0.4 \mu m$ . AF-PHX hygienic fittings are also available with other types of connectors. PHARMALINE N and X hoses can be also used with fittings from AF-T series. Basic TRICLOVER fittings are given in the table below (for more - check „Stainless steel hygienic couplings”).

				
code (AISI 316)	flange diameter A [mm]	outlet diameter d [mm]	ferrule (AISI 304/303)	hose I.D. [inch]
AF-PHXTC-025-05-006	25	4.57	AF-BFXT3-006	1/4
AF-PHXTC-025-08-010	25	8	AF-BFXT3-010	3/8
AF-PHXTC-025-15-013	25	15.75	AF-BFXT3-015	1/2
AF-PHXTC-034-16-016	34	16	AF-BFXT3-016	5/8
AF-PHXTC-050-22-019	50.5	22.1	AF-BFXT3-020	3/4
AF-PHXTC-050-26-025	50.5	26	AF-BFXT3-025	1
AF-PHXTC-050-38-038	50.5	38	AF-BFXT3-040	1.1/2
AF-PHXTC-064-50-050	64	50	AF-BFXT3-050	2

# INDUSTRIAL HOSES - PTFE

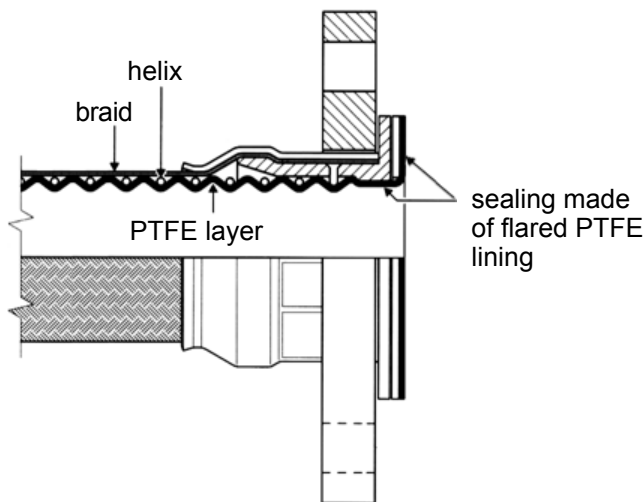


## CORROFLON

**Material:** Helically corrugated PTFE  
**Reinforcement:** AISI 304 stainless steel wire helix  
 AISI 304 braid (SS version)  
 Polypropylene braid (PB version)  
**Working temp.:** From -70°C up to +260°C (SS version)  
 From -30°C up to +100°C (PB version)  
 (working pressure depends on temperature)

**Characteristics:** CORROFLON hose is made of helically corrugated PTFE reinforced with AISI 304 stainless steel wire helix and stainless steel braid (SS version). The construction ensures resistance to vacuum and kinking. A thick wall reduces permeation to minimum. A gentle, shallow corrugation gives an uninterrupted flow, increases cleanability and encourages self-cleaning. All versions are supplied as complete hose assemblies with standard or PTFE lined (flared) fittings.

**Applications:** Due to the unique properties of PTFE (wide temperature range, excellent chemical resistance, non-stick surface), widely used to transfer chemicals, foodstuffs, fuels, oils, paints, solvents, adhesives, detergents, inks, steam, etc.



### CORROFLON - SS version - AISI 304 stainless steel braid

DN [inch]	DN [mm]	flow diameter [mm]	O.D. [mm]	working pressure [bar]	bending radius [mm]	weight [kg/m]	maximum length [m]
1/2	15	11.2	17.5	41	38	0.33	28
3/4	20	15.7	23.1	35	51	0.45	30
1	25	21.5	31.7	31	70	0.70	40
1.1/4	32	27.5	38.4	27	82	0.82	30
1.1/2	40	32	44.6	23	100	1.50	25
2	50	43	59	20	140	2.10	18
2.1/2	65	54	73	16	178	2.58	13
3	80	64	86	14	230	3.29	10
4	100	98	117	10	300	5.05	5
6	150	130	170	5	600	6.70	4



# INDUSTRIAL HOSES - PTFE

## CORROFLON - PB version - polypropylene braid

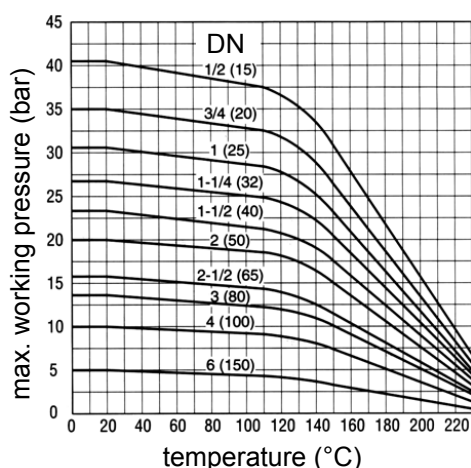
DN [inch]	DN [mm]	flow diameter [mm]	O.D. [mm]	working pressure [bar]	bending radius [mm]	weight [kg/m]	maximum length [m]
1/2	15	11.2	19.1	31	38	0.26	28
3/4	20	15.7	26	26	51	0.36	30
1	25	21.5	34	23	70	0.56	40
1 1/4	32	27.5	43.6	20	80	0.66	30
1 1/2	40	32	48.6	17	100	1.20	25
2	50	43	62	15	140	1.68	18
2 1/2	65	54	77	12	178	2.06	13
3	80	64	90	10	230	2.63	10
4	100	98	120	8	300	3.98	5



### PB - polypropylene braid

A hose in polypropylene braid is more lightweight (around 20% compared to GP SS version) and more resistant to abrasion.

Recommended for applications involving frequent operation and relocation. Excellent for frequent manual handling of the hose in particular. The working temperature ranges from -30°C up to +100°C.



### Relation between working pressure and temperature

The graph shows the relation between the maximum working pressure and temperature for nominal diameters of CORROFLON GP SS hose. At temperatures lower than 0°C and down to -70°C, the maximum working pressures applies as the nominal pressure of the hose. For PB version, in the temperature range from -30°C up to +80°C as per graph. From +80°C up to +100°C reduce the pressure by 50%. RC, FP, SI versions as per graph (within the temperature range of the particular version).

### Vacuum resistance

Hoses in SS version are resistant to full vacuum up to +130°C. Vacuum resistance must be reduced by 1% for every 1°C above +130°C. The resistance of other versions is limited by their maximum working temperature.



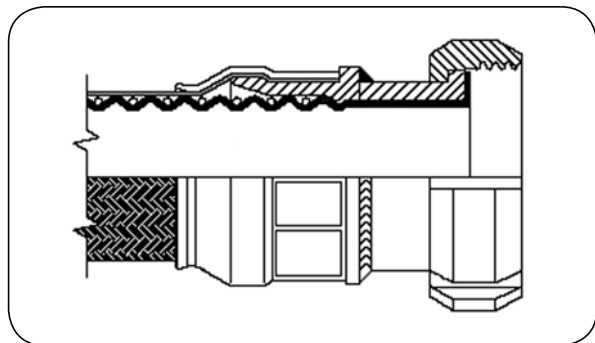
### AS - antistatic internal layer

Special additives reduce inherent, high resistance of PTFE. The electrical resistance between an end fitting and a wetted internal layer should not exceed  $10^8 \Omega$ . One of the end fittings must be grounded. The additives in the material of the hose do not have any impact on its sanitary properties. Compliant with FDA standards.

# INDUSTRIAL HOSES - PTFE

## Complete CORROFLON hose assemblies

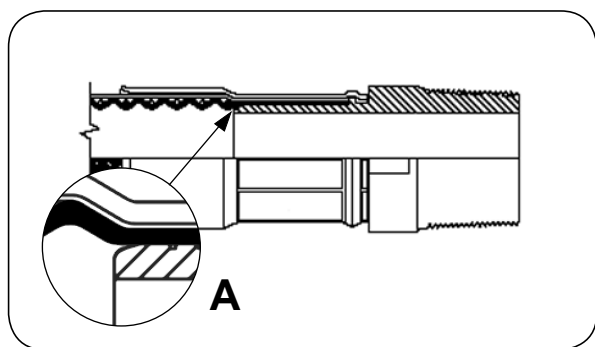
TUBES INTERNATIONAL® produces CORROFLON hose assemblies with fittings in two versions: PTFE lined fittings (PTFE layer is extended through the fitting and flared out as the sealing face) and standard fittings (non-lined fittings).



### PTFE lined fittings

The internal layer of PTFE hose is extended through the fitting and flared out as the sealing face. This construction prevents any contact of the transferred medium with the material of the fitting. Advantages:

- for aggressive media - the separation of transferred fluid from the fitting.
- for food and pharmaceutical substances - the lack of crevices (A) - places in which material particles may be entrapped. It allows to ensure clean and sterile system.



### Non-lined fittings

CORROFLON hose can be equipped with standard fittings used for PTFE hoses with thread and seal types as for hydraulic fittings. Then this PTFE hose assembly is similar to HYPERLINE V hose assemblies but its operation life is much longer, resistance to bending, mechanical impact and vacuum is higher, permeability is reduced. Available with TRICLOVER, non-flared fittings as well.

## CORROFLON hose assembly length limitations

DN		minimum length		maximum length
[inch]	[mm]	straight [mm]	bent 90° [mm]	[m]
1/2	15	75	60	28
3/4	20	75	81	30
1	25	75	110	40
1.1/4	32	75	129	30
1.1/2	40	75	158	25
2	50	75	220	18
2.1/2	65	100	280	13
3	80	100	362	10
4	100	350	472	5
6	150	300	943	4

Values given in the table above do not include the length of the fittings (fitting + ferrule), apply to versions in stainless steel or plastic braid, without rubber cover. The values should be increased by 50% for rubber covered hoses. The length of a complete hose assembly is taken as the length from the sealing face of the fitting at one end of the assembly to the same at the other end. Length tolerance: from 0% to 10% - for lengths above 1 meter and 0% to 5% - for lengths up to 1 meter.

**The maximum working pressure of a hose assembly is determined by the lower from two values: hose working pressure and fitting working pressure.**

# INDUSTRIAL HOSES - PTFE

## Standard flared fittings for CORROFLON hoses

fitting type		SMS	SMS HP	DIN 11851 female	DIN 11851 male
working pressure [bar]		10 (static)	10 (pulsating)	to 1.1/4" - 40, above - 25	
code		AF-CFXSMS...N AF-CFXSMS...W	AF-CFXSMSHP...	AF-CFXDIN...N AF-CFXDIN...W	AF-CFXDIN...Z
hose DN		thread	thread	thread	thread
1"	25	Rd 40x1/6"	Rd 40x1/6"	Rd 52x1/6"	Rd 52x1/6"
1.1/4"	32	-	-	Rd 58x1/6"	Rd 58x1/6"
1.1/2"	40	Rd 60x1/6"	Rd 60x1/6"	Rd 65x1/6"	Rd 65x1/6"
2"	50	Rd 70x1/6"	Rd 70x1/6"	Rd 78x1/6"	Rd 78x1/6"
2.1/2"	65	Rd 85x1/6"	Rd 85x1/6"	Rd 95x1/6"	Rd 95x1/6"
3"	80	Rd 98x1/6"	Rd 98x1/6"	Rd 110x1/4"	Rd 110x1/4"

fitting type		CAMLOCK C type	CAMLOCK A type	swivel flange DIN PN10/16	swivel flange ASA 150
working pressure [bar]		16 (DN 3"-14)	16 (DN 3"-14)	16 (DN 3"-14)	16 (DN 3"-14)
code		AF-CFXCAM...G	AF-CFXCAM...W	AF-CFXSFL...W AF-CFXSFL...K AF-CFXSFL...U	AF-CFXSFLA...W AF-CFXSFLA...K AF-CFXSFLA...U
hose DN		size	size	size	size
1/2"	15	-	-	DN15	DN15
3/4"	20	3/4"	3/4"	DN20	DN20
1"	25	1"	1"	DN25	DN25
1.1/4"	32	1.1/4"	1.1/4"	DN32	DN32
1.1/2"	40	1.1/2"	1.1/2"	DN40	DN40
2"	50	2"	2"	DN50	DN50
2.1/2"	65	2.1/2"	2.1/2"	DN65	DN65
3"	80	3"	3"	DN80	DN80

Fittings are made of AISI 316 stainless steel as a standard (ferrules and flanges with PTFE lined option AISI 304).

Available on request: hose assemblies with flared TRICLOVER fittings, hose assemblies with fittings specified by the customer, 4" and 6" hose assemblies. Please contact Technical Department of TUBES INTERNATIONAL® for advice.

## INDUSTRIAL HOSES - PTFE

### CORROFLON hose versions



#### EC - electrical continuity between fittings

Resistance between end fittings for hoses up to 5 meter:

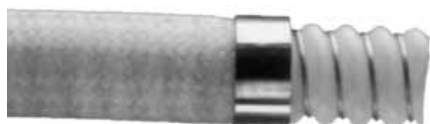
- SS version  $<10\ \Omega$
- PB and KYB versions  $<20\ \Omega$

If electrical continuity is required, EC version should be ordered.



#### TO - tube only (no braid)

Economical solution for low pressure applications without a risk of mechanical damage. Made of translucent PTFE that enables visual control of the flow. The working pressure is reduced by 85%, weight by 35% compared to SS version.



#### KYB - KYNAR braid

Braid made of Polyvinylidene Fluoride Monofilament (KYNAR). Excellent chemical resistance. The working temperature ranges from  $-40^{\circ}\text{C}$  up to  $+120^{\circ}\text{C}$  (inside); up to  $+100^{\circ}\text{C}$  (outside the hose).

The working pressure is reduced by 60%, weight by 30% compared to GP SS version.



#### HB - HASTELLOY braid

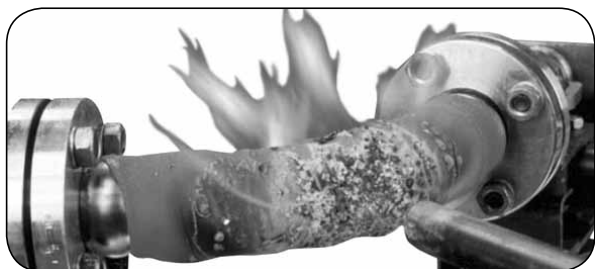
HASTELLOY braid is more resistant to chemicals than SS version. Suitable for applications conveying chlorine or fluoride, and wherever the hose is exposed to intense chemical corrosion.

The working pressure is reduced by 50% compared to SS version.



#### RC - rubber cover

Designed for heavy duty application (e.g. reloading applications). It is SS version with the layer of antistatic EPDM rubber (neoprene/Hypalon also available) vulcanized directly onto the steel braid. The working temperature ranges from  $-40^{\circ}\text{C}$  up to  $+140^{\circ}\text{C}$  (inside); up to  $+120^{\circ}\text{C}$  for EPDM (outside of the hose).



#### FP - fireproof

Fire resistant version of RC hose designed to resist flame and maintain continuous flow in the event of fire. Manufactured according to BS 5173. The working temperature ranges from  $-40^{\circ}\text{C}$  up to  $+140^{\circ}\text{C}$  (inside); up to  $+1200^{\circ}\text{C}$  (outside of the hose). An antistatic version is also available.

## INDUSTRIAL HOSES - PTFE

### CORROFLON hose versions



#### SP - special profile

As a result of construction with corrugations closer together, SP version has better parameters than the standard one. Kink and crush resistance is improved, the working pressure is increased by 25% but the weight is increased by 30%, actual bore diameter is reduced by 3 mm, bending radius is reduced by 25%. The maximum continuous length is reduced by 50%. An antistatic version is also available.



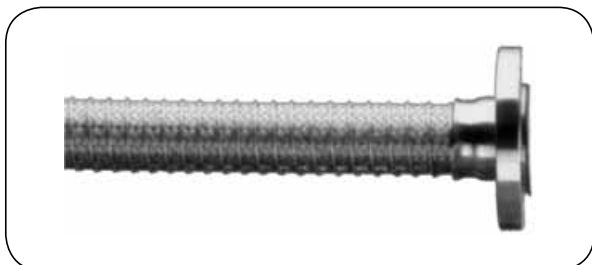
#### SI - additional silicone rubber cover

Used in applications where cleanliness is essential (pharmaceutical, food industry). Remaining parameters are the same as for SS version. Available in diameters up to 3". The working temperature ranges from -40°C up to +180°C (inside); up to +160°C (outside the hose).



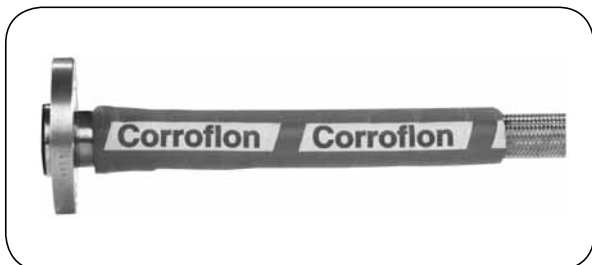
#### SR - scuff rings

Rubber rings are placed every half meter along the hose (diameters from 1" to 3") to protect against abrasion and damage. Resistant to temperature up to +140°C.



#### PC - protection coil

For applications where the hose requires protection against abrasion but other covers are not acceptable (e.g. due to high temperature). Technical parameters are the same as for SS version.



#### RC 300 - rubber cover for fittings

A layer of EPDM rubber is vulcanized directly on the ferrule to protect a handling person from direct contact with a very hot or very cold hose assembly. Also protects against excessive flexing of the hose at the fitting. Length 300 mm.

## INDUSTRIAL HOSES - PTFE



### BIOFLEX ULTRA

**Material:** Smooth inside, corrugated outside PTFE  
**Reinforcement:** AISI 304 steel braid (SS version)  
**Working temp.:** From -70°C up to +260°C (SS version) (working pressure depends on temperature)

**Characteristics:** BIOFLEX ULTRA hose is made of smooth inside and corrugated outside PTFE, reinforced with an external AISI 304 stainless steel braid (SS version). The construction combines properties of smooth hoses (ease of cleaning, uninterrupted flow) and high flexibility that is specific to corrugated hoses. When compared to classic PTFE corrugated hoses, BIOFLEX ULTRA features better resistance to cyclic bending, smaller permeability and the maximum flow rates. Numerous versions are available as complete hose assemblies with PTFE-lined fittings.

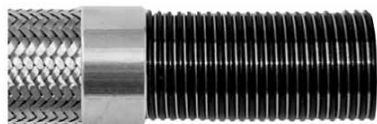
**Applications:** Due to the unique properties of PTFE and state-of-the-art construction, BIOFLEX ULTRA hose is frequently employed in installations transferring: chemicals, food and pharmaceutical substances, fuels, oils, solvents, detergents, adhesives, paints, inks, steam, etc.

#### BIOFLEX ULTRA- standard version GPSS

DN [inch]	DN [mm]	flow diameter [mm]	O.D. [mm]	working pressure* [bar]	bending radius [mm]	weight [kg/m]	maximum length [m]
3/8	10	9.5	12.8	80	19	0.14	18
1/2	15	12.7	16.6	70	38	0.29	18
5/8	16	16	20.6	65	45	0.35	18
3/4	20	19	24.5	60	50	0.40	18
7/8	22	22	28.2	55	60	0.52	18
1	25	25.4	32.3	50	70	0.63	18
1.1/4	32	32	39.5	45	100	0.85	18
1.3/8	35	34.9	43.1	40	120	1.00	16
1.1/2	40	38	47	40	140	1.10	17
1.7/8	48	47.6	57.1	35	190	1.38	13
2	50	50.8	61	30	200	1.90	10

\* maximum working pressure depends on the temperature and the maximum working pressure of fittings assembled on a hose (contact the Technical Department of TUBES INTERNATIONAL®).

### BIOFLEX ULTRA hose versions



#### AS - antistatic internal layer

Special additives reduce inherent, high resistance of PTFE. Compliant with ISO 8031 Annex A. The electrical resistance between an end fitting and a wetted internal layer should not exceed  $10^8 \Omega$ . One of the end fittings must be grounded. Compliant with FDA standards.



#### EC - electrical continuity between end fittings

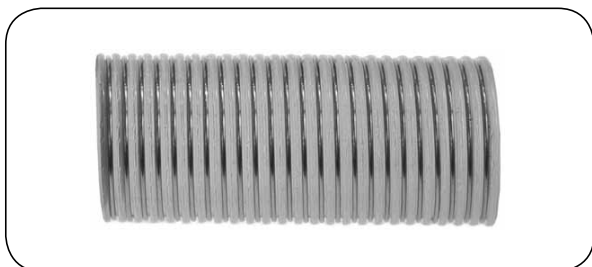
Resistance between end fittings:

- SS version  $<10 \Omega$
- PB version  $<20 \Omega$

If electrical continuity is required, EC version should be ordered.

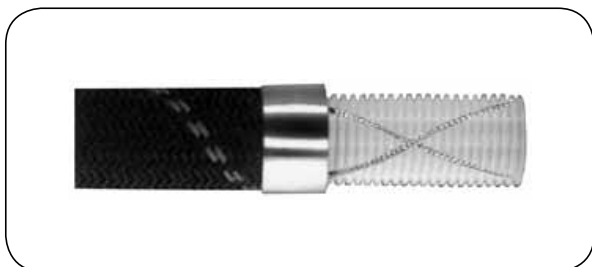
## INDUSTRIAL HOSES - PTFE

### BIOFLEX ULTRA hose versions



#### **TO - tube only (no braid)**

A lightweight hose without braid (available in GP and AS versions) used at low pressure.



#### **PB - polypropylene braid**

A hose in polypropylene braid is more lightweight and more resistant to abrasion. Recommended for applications involving frequent operation and relocation. The working pressure is reduced by 50% (up to +80°C) compared to GPSS version. The hose features two Monel wires to ensure electrical continuity between end fittings. The working temperature ranges from -30°C up to +100°C.



#### **RC - rubber cover**

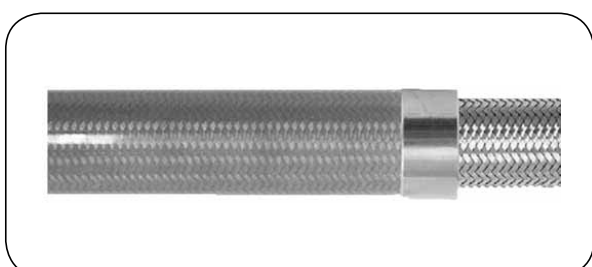
A hose in smooth, blue, EPDM rubber is more resistant to abrasion, chemicals and easier to clean. The cover compliant with USP Class VI. The working temperature: -40°C up to +140°C.



#### **RC FP - fireproof rubber cover**

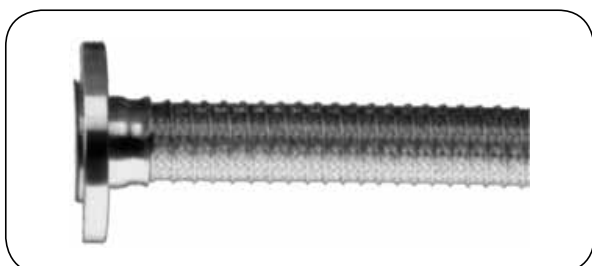
Developed for heavy duty conditions (e.g. reloading systems). It is GP SS version with a layer of black antistatic EPDM rubber vulcanized onto the stainless steel braid. RC FP version conforms to the fire resistance requirements of BS5173 standard.

The working temperature ranges from -40°C up to +140°C.



#### **SI - silicone cover**

A cover made of platinum cured silicone allows visual control of the braid. A very smooth surface of the cover facilitates cleaning. The cover compliant with USP Class VI. The working temperature ranges from -73°C up to +204°C.



#### **PC - protection coil**

#### **SR - scuff rings**

Description as for CORROFLON.

## INDUSTRIAL HOSES - PTFE

### BIOFLEX ULTRA hose fittings



#### SMS

A fitting with a female thread compliant with Swedish SMS specification. PTFE liner ensures clean and uninterrupted flow. All parts made of acid-resistant steel.



#### RJT

A fitting with a female thread compliant with British BS4825 standard. PTFE liner ensures clean and uninterrupted flow. All parts made of acid-resistant steel.



#### DIN 11851

A fitting with a female thread according to German DIN 11851 standard. PTFE liner ensures clean and uninterrupted flow. All parts made of acid-resistant steel.



#### DIN 11851

A fitting with a male thread according to German DIN 11851 standard. PTFE liner ensures clean and uninterrupted flow. All parts made of acid-resistant steel.



#### CAMLOCK

CAMLOCK coupling compliant with MIL-C-27487 standard. PTFE liner ensures clean and uninterrupted flow. All parts made of acid-resistant steel.



#### TRICLOVER

A fitting compliant with BS 4825, ISO 2852 or DIN 32676. PTFE liner ensures clean and uninterrupted flow. All parts made of acid-resistant steel.



# INDUSTRIAL HOSES - PTFE

## BIOFLEX ULTRA hose fittings



### Standard flanges

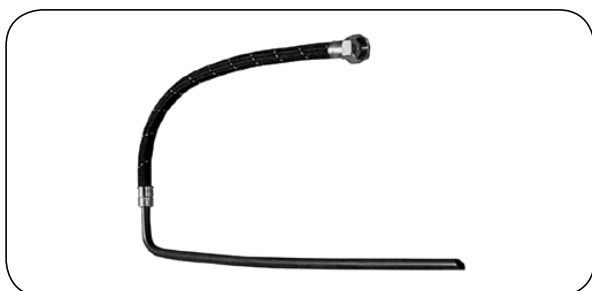
Swivel flanges compliant with ASA 150 and DIN PN16. PTFE liner ensures clean and uninterrupted flow. Flange material: AISI 304 stainless steel. Spigot material: AISI 316L stainless steel.

### ASA 150 flanges (ANSI B 16.5 class 150)

flange size		O.D. [mm]	number of bolts	bore diameter [mm]	raised face diameter [mm]
[inch]	[mm]				
1/2	15	89	4	16	32
3/4	20	98	4	16	43
1	25	108	4	16	50
1.1/2	40	127	4	16	73
2	50	152	4	19	92
3	80	190	4	19	152
4	100	228	8	19	190
6	150	279	8	22	241

### DIN PN16 flanges (BS 4504)

flange size		O.D. [mm]	number of bolts	bore diameter [mm]	raised face diameter [mm]
[inch]	[mm]				
1/2	15	95	4	14	32
3/4	20	105	4	14	43
1	25	115	4	14	63
1.1/2	40	150	4	18	88
2	50	165	4	18	102
3	80	200	8	18	160
4	100	220	8	18	180
6	150	285	8	22	240



### DIP PIPES - tube fittings

Rigid tube fittings, straight or 90° elbow, designed for suction of fluids (or filling up) from tanks, containers, drums, etc. Made of antistatic (AS) PTFE as a standard. Available in AISI 316 stainless steel, virgin PTFE or other materials. The working pressure ranges from full vacuum to 3 bar.



## INDUSTRIAL HOSES - silicone

**SILICONES** - synthetic polymers that consist of macro-molecular silicone organic compounds. Due to their unique physical and chemical properties they are widely used in industry as lubricants, paste, emulsion, raw rubber, silicone resins, etc. Silicone rubber can be extruded into hoses, bands, gaskets, panels or molded into various shapes, profiles etc. It is common in pharmaceutical, biotechnological, food, machine-building, automotive, construction, power industry, etc.

Silicone rubber characteristics:

- resistance to temperature,
- physiological inertness- silicone rubber is biocompatible and resistant to bodily fluids
- flexibility at low temperature,
- good resistance to oxidation,
- anti-adhesive and hydrophobic surface,
- resistance to fire - during burning a layer of silica is formed, which prevents further spreading of fire,
- excellent resistance to infrared radiation, UV and weather conditions,
- resistance to low pressure steam up to WP = 3 bar (high pressure steam causes partial degradation of silicone),
- lack of resistance to concentrated acids, alkalis, petrochemical products with aromatic content.

As a standard, silicone-based hoses are made using one of the technologies: hydrogen peroxide cure system or platinum cure system. Some highly advanced applications require hoses cured on platinum rods. In order to produce hoses with the peroxide cure system, the hydrogen peroxide catalyst must be added to silicone elastomer, then two components are mixed to obtain smooth, homogenous mixture. Using the platinum cure system demands mixing two equal silicone elastomer parts of the same weight. One of them contains platinum catalyst and the other contains crosslinker. Next, both substances are thoroughly mixed to achieve smooth mixture (without air bubbles or undesirable consistency of gel).

Each of the systems has both advantages and disadvantages.

Peroxide cure system:

advantages:

- longer service life of hoses operating in peristaltic pumps,
- reduced brittleness compared to platinum cure system. disadvantages:
- impurities stick easily,
- may produce acidic extracts.

Platinum cure system:

advantages:

- better visual control of the hose content,
- less prone to flaws resulting from a production process (lack of air bubbles, smooth silicone mixture, etc.),
- fewer organic extractables. disadvantages:
- shorter service life of hoses operating in peristaltic pumps.

Depending on application, the hoses must often comply to such standards as:

- US Pharmacopeia Class VI (approval for the pharmaceutical industry),
- FDA (approval for the pharmaceutical and food industry),
- BfR (German equivalent of FDA),
- European Pharmacopoeia (IV Ed., EP. 3.1.9) (approval for the pharmaceutical industry),
- ISO 10993 (biocompatibility certificate used in the medical, biopharmaceutical and pharmaceutical industry),
- 3-A Sanitary Standards (approval for the pharmaceutical and food industry),
- NSF-51 (approval for the food industry).

Additionally, silicone hoses designed for biotechnology must be validated for:

- extractability,
- pyrogenic properties,
- cytotoxicity,
- hemolytic properties.

## INDUSTRIAL HOSES - silicone

### General purpose hoses



#### RADIUSIL / BLUE

**Internal layer:** Blue silicone

**Reinforcement:** Textile braid

**External layer:** Blue silicone

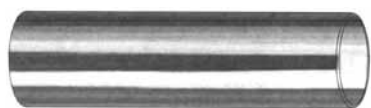
**Working temp.:** From -60°C up to +180°C

Top grade silicone hose widely used in industry (e.g. cooling systems, hot air transfer). Excellent resistance to mineral oil fumes. Hardness: 65° Shore (A).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	weight [kg/m]	standard length [m]
MT-RADIUSIL-B-010	10	18	12	0.23	20
MT-RADIUSIL-B-013	13	21	10	0.28	20
MT-RADIUSIL-B-016	16	24	9	0.35	20
MT-RADIUSIL-B-019	19	27	8	0.37	20
MT-RADIUSIL-B-025	25	33	6	0.47	20
MT-RADIUSIL-B-032	32	40	5	0.58	20
MT-RADIUSIL-B-038	38	46	4	0.68	20
MT-RADIUSIL-B-040	40	48	4	0.71	20
MT-RADIUSIL-B-050	50	58	3	0.87	20
MT-RADIUSIL-B-063	63.5	73.5	4	1.44	20
MT-RADIUSIL-B-075	75	85	4	1.64	20
MT-RADIUSIL-B-100	100	110	2.5	2.20	20

## INDUSTRIAL HOSES - silicone

### General purpose hoses



#### VERSITEC

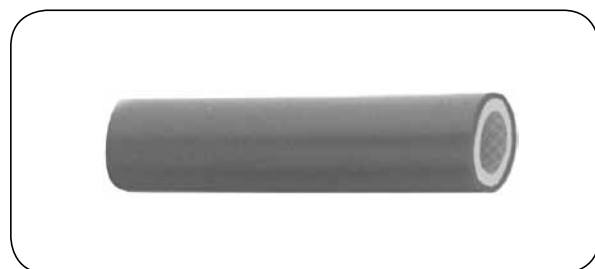
<b>Material:</b>	Half transparent silicone
<b>Hardness:</b>	57° Shore (A)
<b>Density:</b>	1.15 g/cm <sup>3</sup>
<b>Working temp.:</b>	From -50°C up to +200°C (with peaks up to +220°C)

Hose made of peroxide cured silicone. Resistant to UV radiation, oxygen and ozone. Widely used in industry and household appliances. Sterilization with steam, ethylene oxide or radiation. Conforms to FDA and BfR standards.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working pressure [bar]	bending radius [mm]	standard length [m]
VE-761800	0.5	2.5	1	1.3	1	50
VE-761802	1	3	1	1.1	2	50
VE-761804	1.5	3	0.75	0.72	4	50
VE-761806	2	4	1	0.6	7	50
VE-761807	2	5.5	1.75	0.81	3	50
VE-761809	2	6	2	0.9	3	50
VE-761812	3	5	1	0.55	8	50
VE-761814	3	6	1.5	0.64	7	50
VE-761816	3	7	2	0.75	5	50
VE-761819	4	6	1	0.4	15	50
VE-761821	4	7	1.5	0.54	10	25
VE-761823	4	8	2	0.5	8	25
VE-761825	4	10	3	0.75	6	25
VE-761828	5	7	1	0.4	25	25
VE-761830	5	8	1.5	0.45	16	25
VE-761832	5	9	2	0.6	14	25
VE-761834	5	10	2.5	0.64	11	25
VE-761837	6	8	1	0.3	36	25
VE-761839	6	9	1.5	0.37	26	25
VE-761841	6	10	2	0.47	19	25
VE-761843	6	12	3	0.64	12	25
VE-761846	7	10	1.5	0.31	32	25
VE-761848	7	11	2	0.39	23	25
VE-761850	7	12	2.5	0.51	18	25
VE-761852	7	13	3	0.55	15	25
VE-761855	8	11	1.5	0.31	35	25
VE-761857	8	12	2	0.35	28	25
VE-761859	8	14	3	0.5	18	25
VE-761860	8	16	4	0.61	14	25
VE-761862	9	13	2	0.37	39	25
VE-761864	10	14	2	0.36	46	25
VE-761866	10	16	3	0.45	30	25
VE-761868	10	18	4	0.5	26	25
VE-761871	12	17	2.5	0.28	47	25
VE-761874	15	21	3	0.31	70	25
VE-761877	18	24	3	0.26	87	10
VE-761880	20	27	3.5	0.29	102	10
VE-761883	25	35	5	0.28	111	10
VE-761886	30	40	5	0.26	204	10
VE-761888	40	50	5	0.25	270	10

# INDUSTRIAL HOSES - silicone

## General purpose hoses



### REDSIL

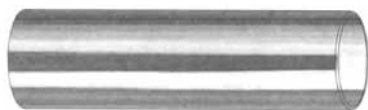
**Internal layer:** Transparent silicone  
**Reinforcement:** PET braid  
**External layer:** Red silicone  
**Hardness:** 70° ± 5° Shore (A)  
**Working temp.:** From -60°C up to +180°C

Delivery hose widely used in industry (e.g. in cooling systems and hot air transfer). Meets the requirements of FDA 21 CFR 177.2600 and BfR XV.

code	I.D. [mm]	wall thickness [mm]	bursting press. 20°C [bar]	bursting press. 95°C [bar]	bursting press. 130°C [bar]	standard length [m]
TS-REDSIL-03X2,5	3	2.5	82	76	40	25
TS-REDSIL-04X2,5	4	2.5	69	59	35	25
TS-REDSIL-05X3,0	5	3	57	41	30	25
TS-REDSIL-06X3,0	6	3	56	39	28	25
TS-REDSIL-07X3,2	7	3.2	55	37	27	25
TS-REDSIL-07X3,5	7	3.5	55	37	27	25
TS-REDSIL-08X3,2	8	3.2	49	34	26	25
TS-REDSIL-08X3,5	8	3.5	49	34	26	25
TS-REDSIL-09X3,5	9	3.5	47	33	25	25
TS-REDSIL-09X3,8	9	3.8	47	33	25	25
TS-REDSIL-10X3,5	10	3.5	44	32	24	25
TS-REDSIL-10X4,0	10	4	44	32	24	25
TS-REDSIL-11X3,5	11	3.5	42	31	23	25
TS-REDSIL-11X4,0	11	4	42	31	23	25
TS-REDSIL-12X3,5	12	3.5	39	29	22	25
TS-REDSIL-12X4,0	12	4	39	29	22	25
TS-REDSIL-13X3,5	13	3.5	38	28	22	25
TS-REDSIL-13X4,0	13	4	38	28	22	25
TS-REDSIL-14X4,0	14	4	37	28	21	25
TS-REDSIL-14X4,5	14	4.5	37	28	21	25
TS-REDSIL-15X4,0	15	4	36	27	21	25
TS-REDSIL-15X4,5	15	4.5	36	27	21	25
TS-REDSIL-16X4,0	16	4	35	26	21	25
TS-REDSIL-16X4,5	16	4.5	35	26	21	25
TS-REDSIL-17X4,0	17	4	34	25	20	25
TS-REDSIL-17X4,5	17	4.5	34	25	20	25
TS-REDSIL-18X4,0	18	4	33	24	20	25
TS-REDSIL-18X4,5	18	4.5	33	24	20	25
TS-REDSIL-19X4,5	19	4.5	32	24	20	25
TS-REDSIL-19X5,0	19	5	32	24	20	25
TS-REDSIL-20X5,0	20	5	31	23	19	25
TS-REDSIL-20X5,5	20	5.5	31	23	19	25

# INDUSTRIAL HOSES - silicone

## Food hoses



### VERSILIC®

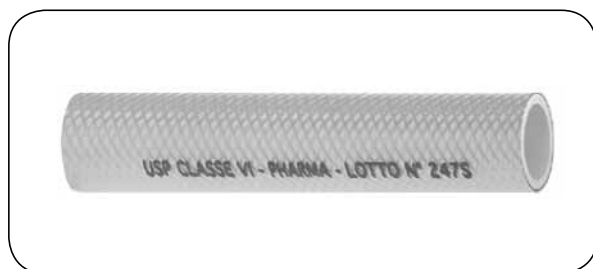
**Material:** Half transparent silicone  
**Hardness:** 62° ±5° Shore (A)  
**Density:** 1.15 ±0.03 g/cm<sup>3</sup>  
**Working temp.:** From -50°C up to +200°C  
 (with peaks up to +230°C)

Flexible, biologically inert hose made of peroxide cured silicone. Retains its chemical, electrical and mechanical properties at temperature up to +200°C. Sterilization with steam, ethylene oxide or radiation. Meets the requirements of FDA, BfR, USP Class VI, ISO 10993 quality standards(toxicity, irritation, cytotoxicity, hemolysis).

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working pressure [bar]	bending radius [mm]	standard length [m]
VE-760010	0.5	2.5	1	1.3	1	50
VE-760070	1	3	1	1.1	2	50
VE-760110	1.5	3	0.75	0.72	3	50
VE-760160	2	4	1	0.6	4	50
VE-760170	2	5.5	1.75	0.81	3	50
VE-760180	2	6	2	0.9	2	50
VE-760210	3	5	1	0.55	7	50
VE-760220	3	5.5	1.25	0.6	6	50
VE-760230	3	6	1.5	0.9	6	50
VE-760250	3	7	2	0.55	4	50
VE-760320	4	6	1	0.64	14	25
VE-760330	4	7	1.5	0.75	9	25
VE-760350	4	8	2	0.4	10	25
VE-760360	4	10	3	0.54	5	25
VE-760410	5	7	1	0.5	23	25
VE-760420	5	8	1.5	0.75	16	25
VE-760430	5	9	2	0.4	12	25
VE-760440	5	10	2.5	0.45	12	25
VE-760490	6	8	1	0.6	29	25
VE-760500	6	9	1.5	0.64	22	25
VE-760510	6	10	2	0.3	20	25
VE-760520	6	12	3	0.37	12	25
VE-760570	7	10	1.5	0.47	25	25
VE-760580	7	11	2	0.64	24	25
VE-760581	7	12	2.5	0.31	19	25
VE-760590	7	13	3	0.39	14	25
VE-760630	8	11	1.5	0.51	31	25
VE-760650	8	12	2	0.55	28	25
VE-760670	8	14	3	0.5	18	25
VE-760690	8	16	4	0.61	17	25
VE-760720	8.5	12	1.75	0.33	32	25
VE-760730	9	13	2	0.37	35	25
VE-760770	10	14	2	0.36	48	25
VE-760800	10	16	3	0.45	30	25
VE-760810	10	18	4	0.5	29	25
VE-760820	10	23	6.5	0.8	15	25
VE-760870	12	15.5	1.75	0.31	66	25
VE-760880	12	17	2.5	0.28	48	25
VE-761050	15	21	3	0.31	66	25
VE-761080	18	24	3	0.26	74	10
VE-761100	20	27	3.5	0.29	99	10
VE-761150	25	35	5	0.28	58	10
VE-761170	30	40	5	0.26	133	10
VE-761190	40	50	5	0.25	80	10
VE-761270	50	60	5	0.19	418	10

## INDUSTRIAL HOSES - silicone

### Food hoses



#### PHARMATECH

**Internal layer:** Half transparent silicone  
**Reinforcement:** Polyester braid  
**External layer:** Half transparent silicone  
**Working temp.:** From -60°C up to +200°C

To quality, hydrophobic delivery hose manufactured through platinum cure technology. Odour-free and taste-free. Smooth surface prevents impurities entrapment or buildup. Sterylation with steam at +135°C, with argon or cobalt as an option. Conforms to the requirements of FDA, USP Class VI, European Pharmacopoeia 3.1.9 European Directives EC 1935/2004 and EC 2023/2006 (GMP). Safety factor 3:1.

code	I.D. [mm]	O.D. [mm]	working press. 20 / 100°C [bar]	bending radius [mm]	standard length [m]
MT-PHARMATECH-02	1.58	7.4	16 / 12.8	25	25
MT-PHARMATECH-03	3.17	9.2	16 / 12.8	25	25
MT-PHARMATECH-05	4.76	11.3	15 / 12	32	25
MT-PHARMATECH-06	6.35	13.2	14 / 11.2	38	25
MT-PHARMATECH-08	7.93	15	12 / 9.6	44	25
MT-PHARMATECH-10	9.52	16.6	11 / 8.8	50	25
MT-PHARMATECH-13	12.7	20.3	9 / 7.2	63	25
MT-PHARMATECH-16	15.87	24.5	8 / 6.4	76	25
MT-PHARMATECH-19	19.05	27.9	6 / 4.8	89	25
MT-PHARMATECH-22	22.2	31.3	5 / 4	100	10
MT-PHARMATECH-25	25.4	34.5	5 / 4	127	10
MT-PHARMATECH-32	31.75	40.8	4 / 3.2	152	10



#### ★★★★★ SILICONE STAR / D

**Internal layer:** Half transparent silicone  
**Reinforcement:** Four polyester braids  
**External layer:** Half transparent silicone  
**Working temp.:** From -60°C up to +180°C

Top quality delivery hose manufactured through platinum cure technology. Extruded internal layer. Conforms to the requirements of FDA 21 CFR 177.2600, USP Class VI, European Pharmacopoeia 3.1.9, BfR XV A, Journal Officiel Brochure 1227. For working temperatures above +100°C reduce the maximum working pressure given in the tables by 1% for each 1°C of temperature rise.

code	I.D. [mm]	O.D. [mm]	working pressure 20°C [bar]	bursting pressure 20°C [bar]	maximum length [m]
SO-SILICONESTAR-D-13	12.7	22.5	7.5	30	4
SO-SILICONESTAR-D-19	19.05	28.85	7.5	30	4
SO-SILICONESTAR-D-25	25.4	35.2	7.5	30	4
SO-SILICONESTAR-D-32	31.8	41.6	6.2	25	4
SO-SILICONESTAR-D-38	38.1	47.9	4.5	18	4
SO-SILICONESTAR-D-51	50.8	60.6	4.5	18	4

## INDUSTRIAL HOSES - silicone

### Food hoses



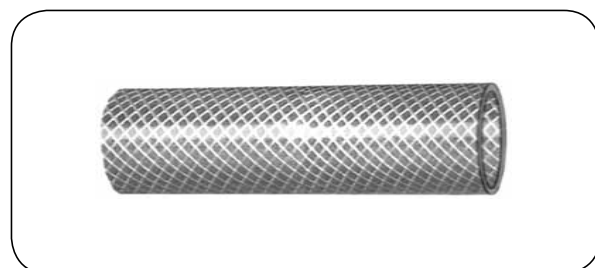
#### ★★★★★ SILICONE STAR / SD

**Internal layer:** Half transparent silicone  
**Reinforcement:** Four polyester braids,  
**External layer:** steel wire helix (AISI 316)  
 Half transparent silicone  
**Working temp.:** From -60°C up to +180°C

Suction-delivery hose manufactured using platinum cure technology. Extruded internal layer. Conforms to the requirements of FDA 21 CFR 177.2600, USP Class VI, European Pharmacopoeia 3.1.9, BfR XV, Journal Officiel Brochure 1227. Full vacuum 736.6 mm Hg (0.98 bar). For working temperatures above +100°C reduce the maximum working pressure given in the tables by 1% for each 1°C of temperature rise.

code	I.D. [mm]	O.D. [mm]	working pressure 20°C [bar]	bursting pressure 20°C [bar]	bending radius [mm]	maximum length [m]
SO-SILICONESTAR-SD-10	9.5	19.3	7.5	30	35	4
SO-SILICONESTAR-SD-13	12.7	22.5	7.5	30	35	4
SO-SILICONESTAR-SD-19	19.05	28.85	7.5	30	50	4
SO-SILICONESTAR-SD-25	25.4	35.2	7.5	30	65	4
SO-SILICONESTAR-SD-32	31.8	41.6	7.5	30	96	4
SO-SILICONESTAR-SD-38	38.1	47.9	7.5	30	110	4
SO-SILICONESTAR-SD-51	50.8	60.6	7.5	30	170	4

### Pharmaceutical and biotechnology hoses



#### Sani-Tech STHT-R

**Material:** Half transparent silicone  
**Reinforcement:** Polyester braid  
**Hardness:** 65° Shore (A)  
**Density:** 1.21 g/cm³  
**Working temp.:** From -62°C up to +260°C  
**Key features:** LOT number marking,  
 colour coding available

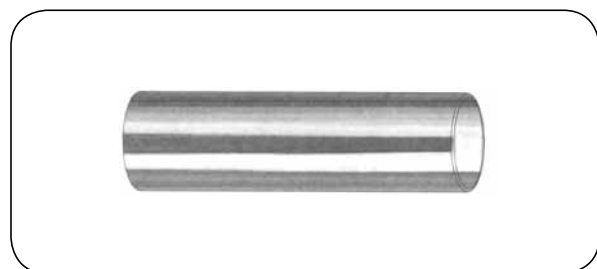
Flexible hose manufactured using platinum cure technology. Used to transport blood, tissue, etc. Imparts neither odour nor taste. Meets the requirements of USP XXIV (88) and USPXXIV (87) for biological reactivity, ISO 10993 standards of biocompatibility, FDA CFR 177.2600, USDA 3A, European Pharmacopoeia 3.1.9.

code	I.D. [mm]	O.D. [mm]	working pressure 20°C [bar]	bursting pressure 20°C [bar]	bending radius [mm]
VE-STHT-R-0062	1.6	6.9	13.7	53.4	-
VE-STHT-R-0125	3.2	9.0	13.1	53.4	-
VE-STHT-R-0187	4.8	11.4	12.8	51.7	-
VE-STHT-R-0250	6.4	12.7	12.4	50.0	25
VE-STHT-R-0375	9.6	15.9	12.4	50.0	51
VE-STHT-R-0500	12.7	22.3	12.1	48.3	76
VE-STHT-R-0625	15.9	25.4	8.6	34.5	102
VE-STHT-R-0750	19.1	28.6	7.2	29.3	102
VE-STHT-R-0875	22.3	32.0	6.9	27.6	127
VE-STHT-R-1000	25.4	35.0	5.17	20.7	152.4



## INDUSTRIAL HOSES - silicone

### Pharmaceutical and biotechnology hoses



#### Sani-Tech STHT-C

**Material:** Transparent silicone  
**Hardness:** 50° Shore (A)  
**Density:** 1.17 g/cm<sup>3</sup>  
**Working temp.:** From -62°C up to +260°C  
**Length:** 7.62 m, 15.24 m or 30.48 m  
**Key features:** Permanent, laser-marked hose code and LOT number

Hose made of platinum cured silicone, of exceptional purity, designed for application in biotechnology. Resistant to high temperature, ozone, radiation, moisture, weather conditions. Neither absorbs nor adsorbs odour and taste. Withstands repeated autoclave, ethylene oxide or radiation sterilization. Meets the requirements of FDA, USP Class VI, ISO 10993, European Pharmacopoeia 3.1.9 and Japanese Pharmacopoeia - Chapter 51. Safety factor 5:1.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working pressure 23°C [bar]
VE-STHT-C-012-0	0.3	0.7	0.2	0.69
VE-STHT-C-020-0	0.5	0.9	0.2	0.55
VE-STHT-C-025-0	0.6	1.2	0.3	0.62
VE-STHT-C-030-0	0.8	1.8	0.5	0.75
VE-STHT-C-030-2	0.8	4	1.6	2.2
VE-STHT-C-040-0	1.0	2.2	0.6	0.75
VE-STHT-C-058-0	1.5	1.9	0.2	0.34
VE-STHT-C-062-1	1.6	3.2	0.8	0.68
VE-STHT-C-062-2	1.6	4.8	1.6	1.17
VE-STHT-C-062-3	1.6	6.4	2.4	1.65
VE-STHT-C-062-4	1.6	8	3.2	2.27
VE-STHT-C-062-5	1.6	11.2	4.8	3.30
VE-STHT-C-062-6	1.6	14.4	6.4	4.34
VE-STHT-C-078-1	2	3.6	0.8	0.62
VE-STHT-C-078-2	2	5.4	1.7	1.03
VE-STHT-C-078-3	2	6.8	2.4	1.44
VE-STHT-C-078-4	2	8.4	3.2	1.86
VE-STHT-C-078-5	2	11.6	4.8	2.69
VE-STHT-C-078-6	2	14.8	6.4	3.56
VE-STHT-C-093-1	2	4	0.8	0.55
VE-STHT-C-093-2	2	5.6	1.6	0.90
VE-STHT-C-093-3	2	7.2	2.4	1.24
VE-STHT-C-093-4	2	8.8	6.4	1.45
VE-STHT-C-093-5	2	12	4.8	2.34
VE-STHT-C-093-6	2	15.2	6.4	3.1
VE-STHT-C-125-1	3.2	4.8	0.8	0.41
VE-STHT-C-125-2	3.2	6.4	1.6	0.69
VE-STHT-C-125-3	3.2	8	2.4	0.97
VE-STHT-C-125-4	3.2	9.6	3.2	1.31
VE-STHT-C-125-5	3.2	12.8	4.8	1.58
VE-STHT-C-125-6	3.2	15.8	6.3	2.41
VE-STHT-C-156-1	4	5.6	0.8	0.41
VE-STHT-C-156-2	4	7.1	1.6	0.62
VE-STHT-C-156-3	4	8.7	2.4	0.76
VE-STHT-C-156-4	4	10.3	3.2	1.03
VE-STHT-C-156-5	4	13.5	4.7	1.59
VE-STHT-C-156-6	4	16.7	6.4	2.07
VE-STHT-C-187-1	4.8	6.4	0.8	0.34

# INDUSTRIAL HOSES - silicone

## Pharmaceutical and biotechnology hoses

### Sani-Tech STHT-C - table follow up

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working pressure 23°C [bar]
VE-STHT-C-187-2	4.8	8	1.6	0.55
VE-STHT-C-187-3	4.8	9.5	2.4	0.76
VE-STHT-C-187-4	4.8	11.1	3.2	0.9
VE-STHT-C-187-5	4.8	14.3	4.7	1.24
VE-STHT-C-187-6	4.8	17.6	6.4	1.79
VE-STHT-C-250-1	6.4	8	0.8	0.14
VE-STHT-C-250-2	6.4	9.5	1.6	0.41
VE-STHT-C-250-3	6.4	11.2	2.4	0.55
VE-STHT-C-250-4	6.4	12.8	3.2	0.69
VE-STHT-C-250-5	6.4	16	4.8	1.03
VE-STHT-C-250-6	6.4	19.2	6.4	1.45
VE-STHT-C-312-1	8.0	9.6	0.8	0.21
VE-STHT-C-312-2	8	11.2	1.6	0.28
VE-STHT-C-312-3	8	12.8	2.4	0.55
VE-STHT-C-312-4	8	14.4	3.2	0.69
VE-STHT-C-312-5	8	17.6	4.7	0.96
VE-STHT-C-312-6	8	20.8	6.4	1.24
VE-STHT-C-375-1	9.5	11.1	0.8	0.21
VE-STHT-C-375-2	9.5	12.7	1.6	0.21
VE-STHT-C-375-3	9.5	14.3	2.4	0.41
VE-STHT-C-375-4	9.5	16	3.2	0.55
VE-STHT-C-375-5	9.5	19.1	4.8	0.76
VE-STHT-C-375-6	9.5	22.3	6.4	1.1
VE-STHT-C-500-1	12.7	14.3	0.8	0.14
VE-STHT-C-500-2	12.7	15.9	1.6	0.27
VE-STHT-C-500-3	12.7	17.5	2.4	0.27
VE-STHT-C-500-4	12.7	19.1	3.2	0.48
VE-STHT-C-500-5	12.7	22.3	4.7	0.62
VE-STHT-C-500-6	12.6	25.4	6.4	0.89
VE-STHT-C-625-1	15.9	17.5	1.6	0.07
VE-STHT-C-625-2	15.9	19.1	1.6	0.21
VE-STHT-C-625-3	15.9	20.7	2.4	0.27
VE-STHT-C-625-4	15.9	22.3	3.2	0.34
VE-STHT-C-625-5	15.8	25.4	4.8	0.55
VE-STHT-C-625-6	15.9	31.8	7.95	0.76
VE-STHT-C-750-1	19.1	20.7	0.8	0.07
VE-STHT-C-750-2	19.1	22.3	1.6	0.14
VE-STHT-C-750-3	19.1	23.9	2.4	0.21
VE-STHT-C-750-4	19	25.4	3.2	0.34
VE-STHT-C-750-5	19	28.6	4.8	0.41
VE-STHT-C-750-6	19	31.8	6.4	0.69
VE-STHT-C-875-1	22.2	23.8	0.8	0.07
VE-STHT-C-875-2	22.2	25.4	1.6	0.07
VE-STHT-C-875-3	22.2	27	2.4	0.14
VE-STHT-C-875-4	22.2	28.6	3.2	0.28
VE-STHT-C-875-5	22.2	31.8	4.8	0.41
VE-STHT-C-875-6	22.2	35	6.4	0.55
VE-STHT-C-1000-1	25.4	27	0.8	0.07
VE-STHT-C-1000-2	25.4	28.6	1.6	0.07
VE-STHT-C-1000-3	25.4	30.2	2.4	0.14
VE-STHT-C-1000-4	25.4	31.8	3.2	0.27
VE-STHT-C-1000-5	25.4	35	4.8	0.34
VE-STHT-C-1000-6	25.4	38.2	6.4	0.48

# INDUSTRIAL HOSES - silicone

## Pharmaceutical and biotechnology hoses



### SILICONE STAR / HD

**Internal layer:** Half transparent silicone  
**Reinforcement:** Four polyester braids, steel wire helix (AISI 316)  
**External layer:** Half transparent silicone  
**Working temp.:** From -60°C up to +180°C

Suction-delivery hoses made using platinum cure technology, resistant to UV radiation and ozone. Compliant with 1935/2004 CE, FDA 21 CFR 177.2600, USP class VI, European Pharmacopoeia 3.1.9, BfR XV, Journal Officiel Brochure 1227. For working temperature above +100°C reduce the maximum working pressure given in the tables by 1% for each 1°C of temperature rise. Safety standard 4:1.

code	I.D. [mm]	O.D. [mm]	working press. 20°C [bar]	vacuum [bar]	bending radius [mm]	maximum length [m]
SO-SILICONESTAR-HD-010	9.5	21.9	10	0.98	45	4
SO-SILICONESTAR-HD-013	12.7	25.1	10	0.98	45	4
SO-SILICONESTAR-HD-019	19.05	31.45	10	0.98	65	4
SO-SILICONESTAR-HD-025	25.4	37.8	10	0.98	80	4
SO-SILICONESTAR-HD-032	31.8	44.2	10	0.98	120	4
SO-SILICONESTAR-HD-038	38.1	50.5	10	0.98	150	4
SO-SILICONESTAR-HD-051	50.8	63.2	10	0.98	180	4
SO-SILICONESTAR-HD-063	63.5	75.9	7	0.98	220	4
SO-SILICONESTAR-HD-076	76.2	88.6	4	0.88	250	4
SO-SILICONESTAR-HD-102	101.6	114	3	0.88	360	4



### DYNAMIC Cleanroom-Platinum

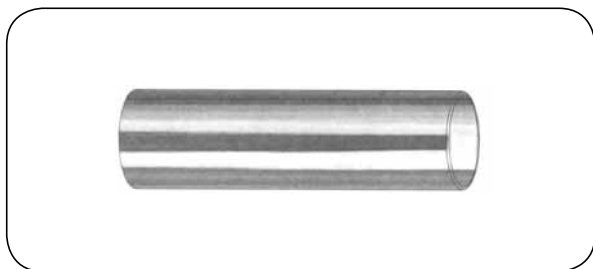
**Internal layer:** White PFA fluoropolymer  
**Reinforcement:** Polyester braids, steel wire helix (AISI 302)  
**External layer:** Transparent silicone  
**Working temp.:** From -30°C up to +150°C

Suction-delivery hose manufactured using platinum cure technology. Sterilization with steam (max. +135°C under 355 bar pressure for 30 min.). The internal layer compliant with FDA, USP Class VI, D.M. 21/03/73 and EU regulation 10/2011/EU. The external layer compliant with USP Class VI, FDA and European Pharmacopoeia. It conforms to EC 1935/2004 and 2023/2006/ EC (GMP). Free of materials of animal origin, phthalates, adipate and other materials restricted by EC Regulation No 1907/2006 (REACH). Safety factor 3:1.

code	I.D. [mm]	O.D. [mm]	working press. 20°C / 100°C [bar]	vacuum [bar]	bending radius stat. / dinam. [mm]	maximum length [m]
MT-DYNAMIC-CP-13	13	23	10 / 8	0.9	45 / 60	20
MT-DYNAMIC-CP-16	16	28	10 / 8	0.9	55 / 75	20
MT-DYNAMIC-CP-19	19	31	10 / 8	0.9	65 / 90	20
MT-DYNAMIC-CP-25	25	37	9 / 7.2	0.9	85 / 140	20
MT-DYNAMIC-CP-32	32	44	8 / 6.4	0.9	120 / 200	20
MT-DYNAMIC-CP-38	38	51	7 / 5.6	0.9	140 / 250	20
MT-DYNAMIC-CP-51	51	67	6 / 4.8	0.9	180 / 300	20
MT-DYNAMIC-CP-63	63.5	79.5	5 / 4	0.9	320 / 380	20
MT-DYNAMIC-CP-76	76	92	4 / 3.2	0.9	380 / 460	20

## INDUSTRIAL HOSES - silicone

### Pharmaceutical and biotechnology hoses



#### C-Flex

**Material:** Thermoplastic elastomer  
**Hardness:** 60° Shore (A)  
**Working temp.:** From -45°C up to +135°C  
**Key features:** Heat sealable with C'eal-Flex™  
TPE Ultra Sealer

Lightweight, transparent, flexible hose made of patented thermoplastic elastomer designed for biotechnological application. Suitable for peristaltic pump application. It is non-toxic, non-hemolytic, non-pyrogenic, high purity, easy heat sealable - properties which are essential for biotechnological processes. It can undergo autoclave, radiation or ethylene oxide sterilization. Resistant to concentrated acids and bases. Compliant with USP Class VI.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	standard length [m]
VE-374-125-2	3.2	6.4	1.6	15
VE-374-188-2	4.8	8	1.6	15
VE-374-188-3	4.8	9.6	2.4	15
VE-374-250-2	6.4	9.6	1.6	15
VE-374-250-3	6.4	11.2	2.4	15
VE-374-250-4	6.4	12.7	3.2	15
VE-374-313-3	8	12.7	2.4	15
VE-374-375-2	9.5	12.7	1.6	15
VE-374-375-3	9.5	14.3	2.4	15
VE-374-375-4	9.5	15.9	3.2	15
VE-374-500-3	12.7	17.5	2.4	15
VE-374-500-4	12.7	19.1	3.2	15
VE-374-625-4	15.9	22.3	3.2	15
VE-374-750-4	19	25.4	3.2	4.5
VE-374-750-6	19	28.3	4.8	4.5
VE-374-750-8	19	31.7	6.4	4.5
VE-374-1000-6	25.4	34.9	4.8	4.5
VE-374-1000-8	25.4	38.1	6.42	4.5




## INDUSTRIAL HOSES - silicone


### Fittings and hose connectors Pure-Fit® type PN 17 bar


For application in medical, pharmaceutical, food, biopharmaceutical and chemical industries. Meet the requirements of USP class VI. The design of the connectors prevents impurities buildup and ensures firm connection with the hose. Made in two versions:


- single-use (polypropylene),
- for steam cleaning (PVDF).

TRICLAMP fittings are manufactured according to ASTM standard.  
The minimum quantity of a single order: 125 pieces.

description	code (polypropylene)	code (PVDF)	hose I.D. [mm]	flange diameter [mm]
	VE-PFLS250PPAF	VE-PFLS250PVDF	6.4	50.4
	VE-PFLS375PPAF	VE-PFLS375PVDF	9.6	50.4
	VE-PFLS500PPAF	VE-PFLS500PVDF	12.7	50.4
	VE-PFLS750PPAF	VE-PFLS750PVDF	19.1	50.4
	VE-PFMS250PPAF	VE-PFMS250PVDF	6.4	25
	VE-PFMS375PPAF	VE-PFMS375PVDF	9.6	25
	VE-PFMS500PPAF	VE-PFMS500PVDF	12.7	25

description	code (polypropylene)	code (PVDF)	hose I.D. [mm]
	VE-PFC250PPAF	VE-PFC250PVDF	6.4
	VE-PFC375PPAF	VE-PFC375PVDF	9.5
	VE-PFC500PPAF	VE-PFC500PVDF	12.7
	VE-PFR250X375PPAF	VE-PFR250X375PVDF	6.4 / 9.5
	VE-PFR250X500PPAF	VE-PFR250X500PVDF	6.4 / 12.7
	VE-PFR375X500PPAF	VE-PFR375X500PVDF	9.5 / 12.7

description	code (polypropylene)	code(PVDF)	hose I.D. [mm]	type
	VE-PFY250PPAF	VE-PFY250PVDF	6.4	Y
	VE-PFY375PPAF	VE-PFY375PVDF	9.5	
	VE-PFY500PPAF	VE-PFY500PVDF	12.7	
	VE-PFT250PPAF	VE-PFT250PVDF	6.4	T
	VE-PFT375PPAF	VE-PFT375PVDF	9.5	
	VE-PFT500PPAF	VE-PFT500PVDF	12.7	

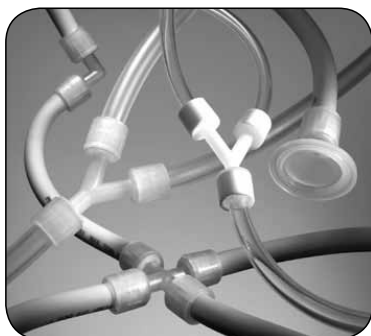
description	code (polypropylene)	code (PVDF)	hose I.D. [mm]
	VE-PFX250PPAF	VE-PFX250PVDF	6.4
	VE-PFX375PPAF	VE-PFX375PVDF	9.5
	VE-PFX500PPAF	VE-PFX500PVDF	12.7

## INDUSTRIAL HOSES - silicone

### Fittings, connectors and accessories systems for pharma and biotechnology



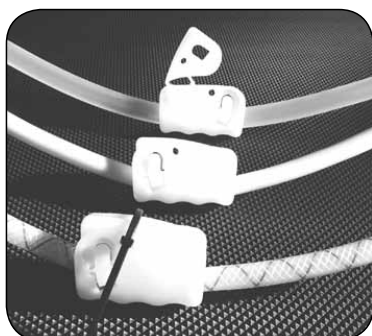
BarbLock®



Pure-Fit® SIB®



Pure-Fit® Tru Valve



Pure-Fit® TC



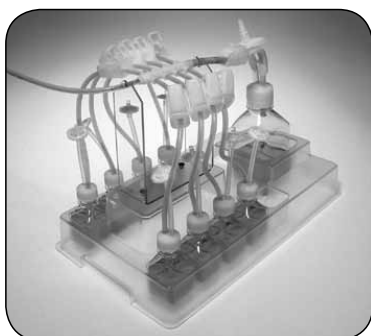
Bio-Simplex® Molded



Sani-Link® Ultra Manifolds



Sani-Tech® (connectors)



Bio-Simplex™ Sampling Manifold Systems



Bio-Simplex™ Gamma Irradiated  
Bottle Assembly Systems



Bio-Simplex™ Ultra Carboys



Sanitary Tank (Critical Process Vessels)



Single-Use BioProcess Bags

TUBES INTERNATIONAL® is the official distributor of Saint Gobain Performance Plastics products for pharmaceutical and biotechnological industry.

## INDUSTRIAL HOSES - TYGON®

TYGON® tubing and VERSILON™ tubing are manufactured from a variety of elastomers and plastics such as: silicone, PVC, polyurethane, fluoropolymers, thermoplastic elastomers. Regardless of the type, they are always made from the premium quality and purity materials, in controlled conditions, using the latest technology. Therefore, they are used in applications that require products of unique, laboratory quality and purity. TYGON® and VERSILON™ tubing - make a group of several tens of types of extruded tubing without reinforcement or braid-reinforced, intended for low working pressure, from a few to over ten bar and from an application-specific vacuum value up to full vacuum. Working temperature, depending on tubing material, reaches up to +200°C. The tubing is available in a wide range of dimensions - the same inner diameter comes in a couple of wall thickness options. Usually supplied by the manufacturer in 15 meter standard lengths.

TYGON® and VERSILON™ tubing meet the hygiene requirements of FDA, Pharmacopoeia, NSF-51, 3-A, ISO, EC directives. They are preferably used for applications which demand the fluid transfer conditions to be consistent, clean, sterile, completely chemically inert. The tubing is marked with LOT number to facilitate identification.

Main applications: transfer and dispensing of food and beverage products, scientific and industrial laboratories, medicine, pharmaceutical industry, biotechnology, chemical industry, fuel and oil hoses, semiconductor industry and electronics.

Many TYGON® and VERSILON™ tubing types are ideal for peristaltic pump application as they are soft enough, flexible, resistant to compression, spallation and flexural fatigue. In standard operation conditions the service life of the tubing in a peristaltic pump is over 1000 h.

We recommend to contact our experts in TUBES INTERNATIONAL® to select tubing appropriate for your application.

Following the most frequent applications, TYGON® and VERSILON™ tubing types can be divided into:

- food grade tubing:  
TYGON® S3™ E-3603, TYGON® S3™ E-LFL, TYGON® S3™ B-44-3, TYGON® S3™ B-44-4X, TYGON® S3™ B-44-4X I.B., TYGON® S3™ M-34-R, TYGON® S3™ A24, TYGON® XL-60, TYGON® A-60-F (ex: NORPRENE® A-60-F), TYGON® A-60-F I.B. (ex: NORPRENE® A-60-F I. B.).
- tubing for pharmaceutical and biotech industry:  
TYGON® 2475, TYGON® 2475 I.B., TYGON® 3350, TYGON® 3370 I.B., PHARMA PURE®, PHARMED®BPT,
- medical tubing:  
TYGON® ND 100-65,
- general-purpose tubing:  
VERSILON™ E-1000 (ex: TYGON® E-1000), VERSILON™ C-210-A (ex: TYGOTHANE®C-210-A), VERSILON™ C-544-A I.B. (ex: TYGOTHANE® C544-A I.B.), TYGON® A-60-G (ex: NORPRENE® A-60-G), VERSILON™ GSR (ex: GSR TUBING), VERSILON™ GA (ex: GA TUBING), VERSILON™, NITRILE (ex: NITRILE TUBING),
- fuel tubing:  
TYGON® F-4040-A, TYGON® LP-1200, TYGON® LP-1100, TYGON® LP-1500, TYGON® LP-1600,
- chemical tubing:  
TYGON® 2375, VERSILON™ F-5500-A (ex: FLURAN®), VERSILON™, TYGON® R-3400 (ex: TYGON® R-3400), TYGON® CHEMICAL (ex: NORPRENE® CHEMICAL), VERSILON™ ISO (ex: ISO-VERSINIC®), VERSILON™ SE-200 (ex: TYGON® SE-200), VERSILON™ PEEK™ (ex: ACUTECH PEEK™).

Main applications of TYGON® tubing:

- chemical processes,
- beverage, dairy products, foodstuffs transfer and dispensing,
- scientific and industrial laboratories,
- medicine (hospitals and laboratories),
- biotechnology and pharmaceutical industry,
- semiconductors, electronics, - peristaltic pumps.

The employees of Sales Department at TUBES INTERNATIONAL® will match your application to specific TYGON® tubing. The following information is required to facilitate the proper hose selection:

- medium,
- working temperature range,
- pressure,
- required dimensional tolerance,
- required hose flexibility, bending radius,
- ambient conditions,
- required cleaning method (sterilization),
- standards concerning hose material (FDA, ISO 10993, etc.),
- required resistance to flexural fatigue, spallation, decontamination with hose extractables, fluid absorption and adsorption, impurities build-up causing bacteria growth,
- waste disposal requirements for used hose.

## Clean Room

TUBES INTERNATIONAL® meets the requirements of very demanding customers by providing highly parameterized hoses and couplings that are used in very specialized and critical applications. The requirements regarding controlled working environment are typical for biotechnological, pharmaceutical, medical, food, computer, aircraft and semi-conductor industry. Our company - a provider of hose and hose assembly solutions for industry, as one of the first in East-Central Europe, has made an effort to ensure the highest standards in terms of cleanliness of assembly, packaging and customizing hoses and hose assemblies. CLEAN ZONE - CLEAN ROOM is equipped with professional appliances that allow effective control of internal and external surface of hoses and hose assemblies, enable secure packaging and customizing of products in controlled working environment.

Today such hose features as: purity, mirror like surface, crystal clear surface, transparency, smoothness take on a new light in TUBES INTERNATIONAL®.

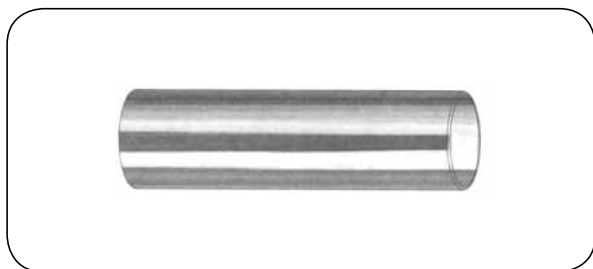
Please contact us if you are interested in the subject or require any additional information.

TYGON®, silicone or PTFE hoses can be assembled with various fittings. Hose assemblies that we make are clean and tight. They come in special heat sealed packaging that prevents contamination with dirt or dust from outside. The hoses are always packed and labeled with all important information on the hose (hose assembly): code (set number), LOT number, length, date of packaging, assembled fittings, etc. We can match the hose (hose assembly) to a specific application when we are provided with information on medium, working pressure and temperature, hose diameter and any other essential working conditions.





# INDUSTRIAL HOSES - TYGON®



## TYGON® S3™ E-3603

**Max. working temp.:** +74°C  
**Brittle temp.:** -46°C  
**Hardness:** 56° Shore (A)  
**Density:** 1.21 g/cm³  
**Key features:** General purpose, peristaltic pumps

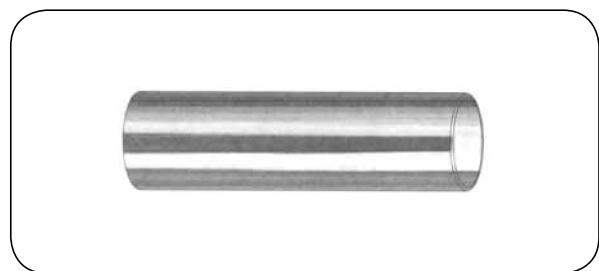
Crystal clear, flexible tubing for laboratory application. The glassy-smooth, non-porous internal surface helps to prevent impurities from adhering or building-up inside the tubing and facilitates cleaning. Total lot-to-lot consistency of tubing parameters. Phthalate-free and BPA-free (Bisphenol A-free). Steam sterilization and ethylene oxide sterilization. Meets the requirements of FDA, 3-A, NSF-51, USP Class VI as well as EU standards: 1935/2004/EC and 10/2011/EU. Complies with the requirements of REACH and of Japanese Food Sanitation Law # 370/1959. Tubing length 15 m.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20°C [bar]	vacuum 20°C [mm Hg]	bending radius [mm]
VE-ACF00001	0.8	2.4	0.8	4.8	760	3.2
VE-ACF00002	1.6	3.2	0.8	2.5	760	6.4
VE-ACF00003	1.6	4.8	1.6	4.8	760	3.2
VE-ACF00004	2.4	4	0.8	1.7	760	9.5
VE-ACF00005	2.4	5.6	1.6	3.2	760	6.4
VE-ACF00006	3.2	4.8	0.8	1.4	508	12.7
VE-ACF00007	3.2	6.4	1.6	2.5	760	9.5
VE-ACF00009	4	5.6	0.8	1.2	305	9.5
VE-ACF00010	4	7.1	1.6	2.1	760	12.7
VE-ACF00011	4.8	6.4	0.8	1	229	25.4
VE-ACF00012	4.8	7.9	1.6	1.7	760	15.9
VE-ACF00013	4.8	9.5	2.4	2.5	760	12.7
VE-ACF00014	4.8	11.1	3.2	3.2	760	9.5
VE-ACF00016	6.4	7.9	0.8	0.8	127	41.3
VE-ACF00017	6.4	9.5	1.6	1.4	508	25.4
VE-ACF00018	6.4	11.1	2.4	1.9	760	19
VE-ACF00019	6.4	12.7	3.2	2.5	760	12.7
VE-ACF00022	7.9	11.1	1.6	1.2	330	34.9
VE-ACF00023	7.9	12.7	2.4	1.6	760	25.4
VE-ACF00024	7.9	14.3	3.2	2.1	760	22.2
VE-ACF00025	7.9	15.9	4	2.5	760	19
VE-ACF00027	9.5	12.7	1.6	1	229	38.1
VE-ACF00028	9.5	14.3	2.4	1.4	533	34.9
VE-ACF00029	9.5	15.9	3.2	1.7	760	28.6
VE-ACF00032	11.1	14.3	1.6	0.9	178	57.2
VE-ACF00033	11.1	15.9	2.4	1.2	381	44.4
VE-ACF00034	11.1	17.5	3.2	1.5	711	34.9
VE-ACF00036	12.7	15.9	1.6	0.8	127	73
VE-ACF00037	12.7	17.5	2.4	1	305	57.2
VE-ACF00038	12.7	19	3.2	1.4	533	38.1
VE-ACF00039	12.7	20.6	4	1.7	760	38.1
VE-ACF00041	14.3	19	2.4	1	229	63.5
VE-ACF00042	14.3	20.6	3.2	1.2	432	50.8
VE-ACF00045	15.9	20.6	2.4	0.9	178	76.2
VE-ACF00046	15.9	22.2	3.2	1.2	330	60.3
VE-ACF00047	15.9	23.8	4	1.4	533	50.8
VE-ACF00050	17.5	22.2	2.4	0.8	152	88.9
VE-ACF00053	19	25.4	3.2	1	229	82.6
VE-ACF00054	19	27	4	1.2	381	69.8
VE-ACF00055	19	28.6	4.8	1.4	533	60.3
VE-ACF00057	19	31.8	6.4	1.7	760	50.8

## INDUSTRIAL HOSES - TYGON®

### TYGON® S3™ E-3603 - table follow up

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20°C [bar]	vacuum 20°C [mm Hg]	bending radius [mm]
VE-ACF00059	22.2	28.6	3.2	0.9	178	104.8
VE-ACF00060	22.2	30.2	4	1	279	88.9
VE-ACF00062	25.4	31.8	3.2	0.8	127	120.6
VE-ACF00064	25.4	34.9	4.8	1.1	305	101.6
VE-ACF00065	25.4	38.1	6.4	1.4	533	76.2
VE-ACF00068	28.6	38.1	4.8	1	229	114.3
VE-ACF00069	31.8	38.1	3.2	0.7	76	200
VE-ACF00070	31.8	41.3	4.8	0.9	178	139.7
VE-ACF00073	38.1	47.6	4.8	0.8	127	184.2
VE-ACF00074	38.1	50.8	6.4	1	229	149.2
VE-ACF00076	44.4	57.2	6.4	0.9	178	190.5
VE-ACF00078	50.8	63.5	6.4	0.8	127	238.1
VE-ACF1S1502	2	4	1	2.5	760	7
VE-ACF1S1517	3	5	1	1.7	760	13
VE-ACF1S1518	4	6	1	1.4	533	16
VE-ACF1S1503	5	8	1.5	1.6	760	19
VE-ACF1S1504	6	9	1.5	1.4	559	22
VE-ACF1S1506	8	12	2	1.4	533	29



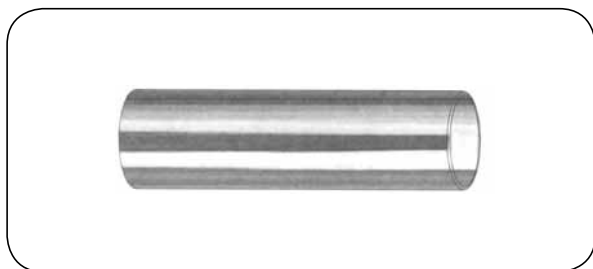
### TYGON® S3™ E-LFL

**Max. working temp.:** +74°C  
**Brittle temp.:** -46°C  
**Hardness:** 56° Shore (A)  
**Density:** 1.17 g/cm³  
**Key features:** Peristaltic pumps

Crystal clear tubing widely used in food, cosmetic, pharmaceutical and chemical industry due to its outstanding resistance to abrasion, spallation, ageing and chemicals. It is non-toxic. Phthalate-free and BPA-free (Bisphenol A-free). Steam sterilization and ethylene oxide sterilization. Meets the requirements of USP Class VI, FDA, 3-A, NSF-51, ISO10993 as well as EU standards: 1935/2004/EC and 10/2011/EU. The tubing is also compliant with REACH and Japanese Food Sanitation Law # 370/1959. Tubing length 7.5 m (from Ø 19 mm - 3 m).

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20°C [bar]	vacuum 20°C [mm Hg]	bending radius [mm]
VE-AVX42003	1.6	4.8	1.6	3.5	760	6
VE-AVX42007	3.2	6.4	1.6	2.3	760	13
VE-AVX42012	4.8	8	1.6	1.7	760	19
VE-AVX42017	6.4	9.6	1.6	1.4	381	25
VE-AVX42019	6.4	12.8	3.2	2.4	760	19
VE-AVX42022	8	11.2	1.6	1.1	254	32
VE-AVX42029	9.5	15.9	3.2	1.7	760	25
VE-AVX42038	12.7	19.1	3.2	1.4	508	38
VE-AVX06057	19	31.8	6.4	1.7	760	44
VE-AVX06064	25.4	35	4.8	1	127	83

# INDUSTRIAL HOSES - TYGON®



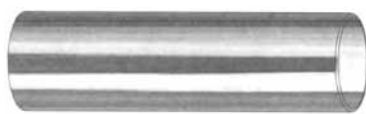
## TYGON® S3™ B-44-3

**Max. working temp.:** +74°C  
**Brittle temp.:** -36°C  
**Hardness:** 66° Shore (A)  
**Density:** 1.21 g/cm³  
**Key features:** General purpose food hose, phthalate free

Clear as glass, lightweight, flexible, phthalate-free tubing. Resistant to a wide range of chemicals. Steam sterilization and ethylene oxide sterilization. Suitable for peristaltic pumps. Meets the requirements of FDA, NSF-51, NSF-61, 3-A, EU:1935/2004/EC, 10/2011EU, REACH and of Japanese MHLW 370/3-D standard. Tubing length 15 m (from Ø 50.8 mm - 6 m).

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 23°C [bar]	vacuum 23°C [mm Hg]	bending radius [mm]
VE-AAB00002	1.6	3.2	0.8	4.14	759	6.4
VE-AAB00003	1.6	4.8	1.6	6.89	759	3.2
VE-AAB00004	2.4	4	0.8	2.96	759	9.6
VE-AAB00005	2.4	5.6	1.6	5.1	759	6.4
VE-AAB00006	3.2	4.8	0.8	2.34	635	12.8
VE-AAB00007	3.2	6.4	1.6	4.14	759	9.6
VE-AAB00009	4	5.6	0.8	1.93	406	19
VE-AAB00010	4	7.1	1.6	3.45	759	12.8
VE-AAB00011	4.8	6.4	0.8	1.72	279	25.4
VE-AAB00012	4.8	8	1.6	2.96	759	15.9
VE-AAB00013	4.8	9.6	2.4	4.14	759	12.8
VE-AAB00014	4.8	11.1	3.2	5.1	759	9.6
VE-AAB00016	6.4	8	0.8	1.31	152	41.4
VE-AAB00017	6.4	9.6	1.6	2.34	635	25.4
VE-AAB00018	6.4	11.2	2.4	3.24	759	19
VE-AAB00019	6.4	12.7	3.2	4.14	759	15.9
VE-AAB00022	7.9	11.1	1.6	1.93	406	35
VE-AAB00023	7.9	12.7	2.4	2.76	759	25.4
VE-AAB00024	7.9	14.3	3.2	3.45	759	22.3
VE-AAB00027	9.5	12.7	1.6	1.72	279	44.4
VE-AAB00028	9.5	14.3	2.4	2.34	635	35.3
VE-AAB00029	9.5	15.9	3.2	3.03	759	28.6
VE-AAB00034	11.1	17.5	3.2	2.48	759	35
VE-AAB00036	12.7	15.9	1.6	1.31	152	73.1
VE-AAB00037	12.7	17.5	2.4	1.86	355	54
VE-AAB00038	12.7	19.1	3.2	2.34	635	44.4
VE-AAB00046	15.9	22.3	3.2	2	406	60.4
VE-AAB00051	17.5	23.9	3.2	1.86	330	73.1
VE-AAB00053	19	25.4	3.2	1.72	279	82.6
VE-AAB00059	22.2	28.6	3.2	1.52	203	104.8
VE-AAB00062	25.4	31.8	3.2	1.38	152	130.2
VE-AAB00064	25.4	35	4.8	1.86	355	95.2
VE-AAB00065	25.4	38.1	6.4	2.34	635	76.2
VE-AAB00069	31.8	38.1	3.2	1.1	101	187.4
VE-AAB00070	31.8	41.4	4.8	1.59	228	139.8
VE-AAB00071	31.8	44.4	6.3	1.93	406	111.2
VE-AAB00073	38.1	47.6	4.8	1.31	152	184.2
VE-AAB00074	38.1	50.8	6.4	1.72	279	149.3
VE-AAB00076	44.4	57.2	6.4	1.52	203	190.6
VE-AAB00078	50.8	63.6	6.4	1.31	152	238.2
VE-AAB00080	50.8	76.2	12.7	2.34	635	139.8
VE-AAB00081	57.2	69.8	6.4	1.24	127	285.8

## INDUSTRIAL HOSES - TYGON®



### TYGON® S3™ B-44-4X

**Max. working temp.:** +74°C  
**Brittle temp.:** -36°C  
**Hardness:** 66° Shore (A)  
**Density:** 1.21 g/cm³  
**Key features:** General purpose food hose

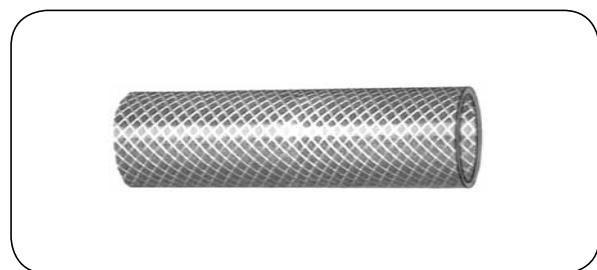
Clear as glass, flexible, taste-free and odour-free, non-toxic tubing. The glassy-smooth, non-porous tubing surface helps to prevent impurities build-up and bacteria growth. Excellent resistance to harsh alkaline cleaners and sanitizers. Steam sterilization and ethylene oxide sterilization. Suitable for peristaltic pumps. Meets the requirements of FDA, NSF-51, NSF-61, 3-A, EU:1935/2004/EC, 10/2011EU, REACH and of Japanese MHLW 370/3-D standard. Tubing length 15 m (from Ø 50.8 mm - 6 m).

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20°C [bar]	vacuum 20°C [mm Hg]	bending radius [mm]
VE-T4401-13	0.8	2.4	0.8	6.89	759	3
VE-T4402-13	1.6	3.2	0.8	4.14	759	6
VE-T4402-23	1.6	4.8	1.6	6.89	759	3
VE-T4403-13	2.4	4	0.8	2.96	759	10
VE-T4404-13	3.2	4.8	0.8	2.34	635	13
VE-T4404-23	3.2	6.4	1.6	4.14	759	10
VE-T4405-13	4	5.6	0.8	1.93	406	19
VE-T4405-23	4	7.2	1.6	3.45	759	13
VE-T4406-13	4.8	6.4	0.8	1.72	279	25
VE-T4406-23	4.8	8	1.6	2.96	759	16
VE-T4406-33	4.8	9.6	2.4	4.14	759	13
VE-T4408-23	6.4	9.6	1.6	2.34	635	25
VE-T4408-33	6.4	11.2	2.4	3.24	759	19
VE-T4408-43	6.4	12.8	3.2	4.14	759	16
VE-T4410-23	8	11.2	1.6	1.93	406	35
VE-T4410-33	8	12.8	2.4	2.76	759	25
VE-T4410-43	8	14.4	3.2	3.45	759	22
VE-T4410-53	8	16	4	4.14	759	19
VE-T4412-23	9.5	12.7	1.6	1.72	279	44
VE-T4412-33	9.5	14.3	2.4	2.34	635	35
VE-T4412-43	9.5	15.9	3.2	3.03	759	29
VE-T4414-23	11.1	14.3	1.6	1.52	203	57
VE-T4414-33	11.1	15.9	2.4	2.07	482	44
VE-T4416-23	12.7	15.9	1.6	1.31	152	73
VE-T4416-33	12.7	17.5	2.4	1.86	356	54
VE-T4416-43	12.7	19.1	3.2	2.34	635	44
VE-T4416-53	12.7	20.7	4	2.76	759	38
VE-T4420-33	15.9	20.7	2.4	1.59	229	76
VE-T4420-43	15.9	22.3	3.2	2	406	60
VE-T4420-53	15.9	23.8	4	2.41	660	51
VE-T4424-43	19	25.4	3.2	1.72	279	83
VE-T4424-53	19	27	4	2.07	457	70
VE-T4424-63	19	28.6	4.8	2.34	660	60
VE-T4424-83	19	31.8	6.4	2.96	759	51
VE-T4428-43	22.2	28.6	3.2	1.52	203	105
VE-T4432-43	25.4	31.8	3.2	1.38	152	130
VE-T4432-53	25.4	33.3	4	1.65	254	111
VE-T4432-63	25.4	35	4.8	1.86	356	95
VE-T4432-83	25.4	38.2	6.4	2.34	635	76
VE-T4436-43	28.6	35	3.2	1.24	127	159

## INDUSTRIAL HOSES - TYGON®

### TYGON® B-44-4X - table follow up

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20°C [bar]	vacuum 20°C [mm Hg]	bending radius [mm]
VE-T4440-63	31.8	41.4	4.8	1.59	229	140
VE-T4448-83	38.1	50.9	6.4	1.72	279	150
VE-T4464-82	50.8	63.6	6.4	1.31	152	238
VE-T4464-163	50.8	76.2	12.7	2.34	635	140
VE-T4480-82	63.5	76.3	6.4	1.1	102	340
VE-T4480-122	63.5	82.5	9.5	1.59	229	254
VE-T4496-82	76.2	89	6.4	0.97	51	457
VE-T4499-162	101.6	127	12.7	1.31	152	432



### TYGON® S3™ B-44-4X-I.B.

**Max. working temp.:** +74°C

**Brittle temp.:** -36°C

**Hardness:** 66° Shore (A)

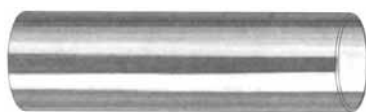
**Density:** 1.21 g/cm³

**Key features:** General purpose food hose

Flexible, reinforced with polyester braid, non-toxic, taste-free and odour-free tubing. The glassy-smooth, non-porous tubing surface helps to prevent impurities build-up and bacteria growth. Excellent resistance to harsh alkaline cleaners and sanitizers. Ethylene oxide sterilization. Meets the requirements of FDA 21 CFR 175.300, NSF-51, NSF-61, 3-A, Japanese MHLW 370/3-D standard and complies with European REACH standards. Tubing length 15 m (from Ø 38.1 mm - 6 m).

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20° / 70°C [bar]	vacuum 70°C [mm Hg]	bending radius [mm]
VE-T1408-33	6.4	11.2	2.4	17.24 / 6.21	759	38
VE-T1412-43	9.5	15.9	3.2	11.72 / 6.21	635	29
VE-T1416-43	12.7	19.1	3.2	13.79 / 6.55	254	54
VE-T1420-43	15.9	22.3	3.2	11.38 / 7.24	254	60
VE-T1424-43	19	25.4	3.2	10 / 5.86	127	83
VE-T1432-63	25.4	35	4.8	6.89 / 4.14	127	95
VE-T1440-63	31.8	41.4	4.8	5.86 / 3.79	76	140
VE-T1448-83	38.1	50.9	6.4	5.17 / 3.1	51	149
VE-T1464-122	50.8	70	9.6	4.14 / 2.76	25	175
VE-T1496-122	76.2	95.2	9.5	2.76 / 1.72	25	337

## INDUSTRIAL HOSES - TYGON®

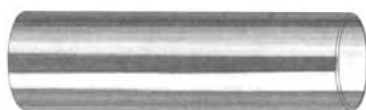


### TYGON® S3™ M-34-R

**Max. working temp.:** +74°C  
**Brittle temp.:** -36°C  
**Hardness:** 66° Shore (A)  
**Density:** 1.21 g/cm³  
**Key features:** For milk and dairy products transfer

Clear as glass, flexible, phthalate-free tubing. The smooth, non-porous tubing internal surface inhibits fats and other particle entrapment, which may cause bacteria growth. Meets the requirements of FDA 21 CFR 175.300, REACH standards as well as EU Regulations 1935/2004/EC and 10/2011/EU. Tubing length 30 m.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 23°C [bar]	vacuum 23°C [mm Hg]	bending radius [mm]
VE-ACK02035	11.1	19	4	3.1	759	28.6
VE-ACK02039	12.7	20.7	4	2.76	759	38.1
VE-ACK02043	14.3	23.9	4.8	2.96	759	38.1
VE-ACK02048	15.9	25.4	4.8	2.76	759	44.4
VE-ACK02056	19	29.7	5.35	2.48	759	57.3
VE-ACK02061	22.2	34.9	6.4	2.62	759	63.5
VE-ACK02065	25.4	38.1	6.4	2.34	635	76.2



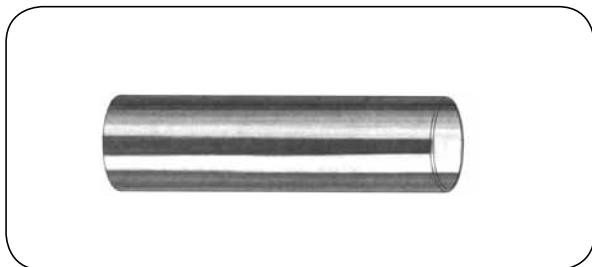
### TYGON® S3™ A24

**Max. working temp.:** +74°C  
**Brittle temp.:** -36°C  
**Hardness:** 56° Shore (A)  
**Density:** 1.21 g/cm³  
**Key features:** For milk and dairy products transfer

Phthalate-free tubing intended to convey air in automatic milking systems, resists full vacuum. As the tubing is crystal clear, the backflow of milk into the air lines can be easily detected. The tubing is designed to work with TYGON® S3™ M-34-R tubing in automatic milking process. Meets the requirements of FDA 21 CFR 175.300, NSF-51, 3-A and Japanese MHLW 370/3-D standard. Black tubing (TYGON A24-C) and twin tubing is available as well. Tubing length 30 m.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 23°C [bar]	vacuum 23°C [mm Hg]	bending radius [mm]
VE-ACR02019	6.4	12.7	3.2	1.72	759	28.6
VE-ACR02021	7.2	13.5	3.2	1.72	759	28.6
VE-ACR02029	9.5	16	3.2	1.72	759	28.6
VE-ACR02034	11.1	17.5	3.2	1.72	759	28.6
VE-ACR02038	12.7	19	3.2	1.72	759	28.6

## INDUSTRIAL HOSES - TYGON®

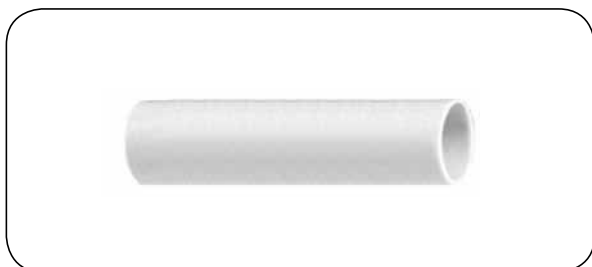


### TYGON® XL-60

**Max. working temp.:** +121°C  
**Brittle temp.:** -66°C  
**Hardness:** 60° Shore (A)  
**Density:** 0.9 g/cm³  
**Key features:** Peristaltic pumps

Lightweight, flexible, transparent and phthalate-free tubing (meets the requirements of EU 2002/72/EEC for materials that come into contact with food). Extremely flexible, resistant to ozone, oxygen and ageing. Resistant to most acids and bases. Not suitable for media containing fat. Steam, ethylene oxide or radiation sterilization. Meets 94-HB flammability rating. Additionally, it is compliant with the following standards: FDA 21 CFR 177.1210, NSF-51 and UE:1935/2004/EC, 10/2011EU.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press.20°C [bar]	vacuum [mm Hg]	standard length [m]
VE-AN800003	1.6	4.8	1.6	2.4	759	15
VE-AN800007	3.2	6.4	1.6	1.4	759	15
VE-AN800012	4.8	8	1.6	0.9	759	15
VE-AN800017	6.4	9.6	1.6	1	759	15
VE-AN800022	8	11.2	1.6	0.8	508	15
VE-AN800027	9.5	12.7	1.6	0.8	381	15
VE-AN800038	12.7	19.1	3.2	1	759	15
VE-AN800046	15.9	22.3	3.2	0.8	508	15
VE-AN800053	19	25.4	3.2	0.8	508	15



### TYGON® A-60-F I.B.

**Max. working temp.:** +135°C  
**Brittle temp.:** -60°C  
**Hardness:** 61° Shore (A)  
**Density:** 0.98 g/cm³  
**Key features:** General purpose food hose

Beige, flexible tubing with polyester braid reinforcement. Taste and odour-free. Resistant to cleaners, sanitizers (hydrogen peroxide, sodium hypochlorite), bases, ageing, ozone and UV radiation. Steam, ethylene oxide or radiation sterilization. Complies with FDA 21 CFR 177.2600, 3-A, REACH and NSF 51. Tubing length 15 m.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20°C / 80°C [bar]	vacuum 80°C [mm Hg]	bending radius [mm]
VE-APW00019	6.4	12.8	3.2	8.62 / 4.83	759	19
VE-APW00029	9.5	15.9	3.2	7.24 / 4.48	508	32
VE-APW00038	12.7	19.1	3.2	6.89 / 4.14	381	57
VE-APW00046	15.9	22.3	3.2	6.55 / 3.79	254	63
VE-APW00054	19	26.9	3.95	5.86 / 3.1	127	83
VE-APW00064	25.4	34.9	4.75	5.15 / 2.76	178	127

## INDUSTRIAL HOSES - TYGON®



### TYGON® A-60-F

**Max. working temp.:** +135°C

**Brittle temp.:** -60°C

**Hardness:** 61° Shore (A)

**Density:** 0.98 g/cm³

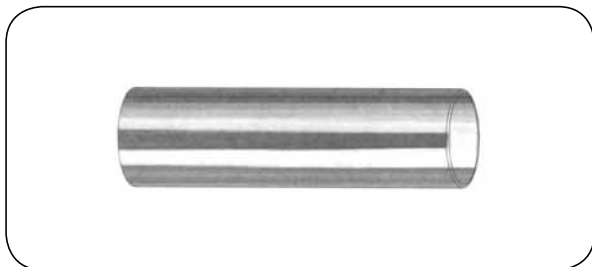
**Key features:** General purpose food hose, peristaltic pumps

Beige, taste-free and odour-free, exceptionally flexible tubing resistant to deformation. Resistant to cleaners, sanitizers, bases, ageing, ozone and UV radiation. Steam, ethylene oxide or radiation sterilization. Complies with FDA 21 CFR 177.2600, 3-A, REACH and NSF 51. Tubing length 15 m.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20°C / 80°C [bar]	vacuum 80°C [mm Hg]	bending radius [mm]
imperial size						
VE-R6F02-23	1.6	4.8	1.6	2.34 / 1.45	759	6
VE-R6F04-23	3.2	6.4	1.6	1.31 / 0.83	759	13
VE-R6F06-23	4.8	8	1.6	0.90 / 0.55	584	19
VE-R6F08-23	6.4	9.6	1.6	0.69 / 0.41	330	32
VE-R6F08-43	6.4	12.8	3.2	1.31 / 0.83	759	19
VE-R6F10-23	8	11.2	1.6	0.55 / 0.34	203	38
VE-R6F12-23	9.5	12.7	1.6	0.48 / 0.28	127	57
VE-R6F12-43	9.5	15.9	3.2	0.9 / 0.55	584	32
VE-R6F16-43	12.7	19.1	3.2	0.69 / 0.41	330	51
VE-R6F20-43	15.9	22.3	3.2	0.55 / 0.34	203	83
VE-R6F24-43	19	25.4	3.2	0.48 / 0.28	127	102
metric size						
VE-R6F0C-103	3	5	1	0.97 / 0.62	584	13
VE-R6F0D-103	4	6	1	0.76 / 0.48	330	19
VE-R6F0G-203	4	8	2	1.38 / 0.90	759	13
VE-R6F0J-203	6	10	2	0.97 / 0.62	610	19
VE-R6F0L-203	7	11	2	0.83 / 0.55	432	25
VE-R6F0N-203	8	12	2	0.76 / 0.48	330	32
VE-R6F0P-203	10	14	2	0.62 / 0.41	203	44



## INDUSTRIAL HOSES - TYGON®

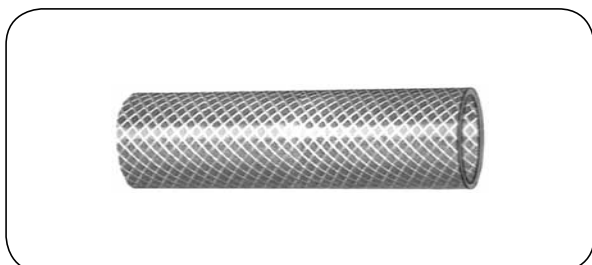


### TYGON® 2475

**Max. working temp.:** +52°C  
**Brittle temp.:** -78°C  
**Hardness:** 72° Shore (A)  
**Density:** 0.90 g/cm³  
**Key features:** Hydrophobic, chemical resistance

Transparent, flexible tubing resists the absorption/adsorption of aqueous fluids. The rate of particle migration through the tubing wall is very low. Lack of plasticizers prevents potential contamination of the fluid flowing through the tubing. Ethylene oxide or radiation sterilization up to 2.5 MRad. Meets the requirements of FDA and USP class VI. Tubing length 15 m (Ø 25.4 mm - 7.5 m).

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20°C [bar]	vacuum 20°C [mm Hg]	bending radius [mm]
VE-ACG00003	1.6	4.8	1.6	5.86	759	3
VE-ACG00007	3.2	6.4	1.6	3.44	759	6
VE-ACG00012	4.8	8	1.6	2.75	759	13
VE-ACG00017	6.4	9.6	1.6	2.06	759	19
VE-ACG00022	8	11.2	1.6	1.24	759	35
VE-ACG00027	9.5	12.7	1.6	1.37	635	44
VE-ACG00038	12.7	19.1	3.2	1.99	759	38
VE-ACG00046	15.9	22.3	3.2	1.72	759	57
VE-ACG00053	19	25.4	3.2	1.44	759	86
VE-ACG42064	25.4	35	4.8	1.37	759	76



### TYGON® 2475 I.B.

**Max. working temp.:** +52°C  
**Brittle temp.:** -78°C  
**Hardness:** 72° Shore (A)  
**Density:** 0.90 g/cm³  
**Key features:** Hydrophobic, chemical resistance

Translucent, flexible tubing resists the absorption/adsorption of aqueous fluids. The rate of particle migration through the tubing wall is very low. Lack of plasticizers prevents potential contamination of the fluid flowing through the tubing. Ethylene oxide or radiation sterilization up to 2.5 MRad. Meets the requirements of FDA and USP class VI. Tubing length 15 m (Ø 25.4 mm - 7.5 m, Ø 38 mm - 3 m).

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20°C [bar]	vacuum 20°C [mm Hg]	bending radius [mm]
VE-ACX00019	6.4	12.8	3.2	15.5	759	10
VE-ACX00029	9.5	15.9	3.2	14.5	759	25
VE-ACX00038	12.7	19.1	3.2	15.9	759	25
VE-ACX00046	15.9	22.3	3.2	9.3	759	44
VE-ACX00054	19	27	4	9.3	759	32
VE-ACX42064	25.4	35	4.8	8.6	759	89

# INDUSTRIAL HOSES - TYGON®



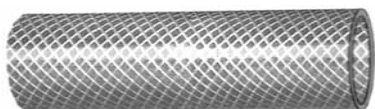
## TYGON® 3350

**Max. working temp.:** +204°C  
**Brittle temp.:** -80°C  
**Hardness:** 50° Shore (A)  
**Density:** 1.14 g/cm³  
**Key features:** Pharmacology and biotechnology application

Translucent, flexible silicone tubing made of platinum cured silicone. The tubing features excellent flow rates, facilitates cleaning, prevents bacteria build-up and growth. It is non-toxic, non-haemolytic and non-pyrogenic. Steam, ethylene oxide or radiation sterilization up to 2.5 MRad. Meets the requirements of: FDA 21 CFR Part 177.2600; 3-A; NSF-51 and ISO10993 for use in contact with blood (body fluids, tissue) up to the maximum period of 30 days. Tubing length 15 m.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20°C / 160°C [bar]	vacuum 20°C [mm Hg]	bending radius [mm]
imperial size						
VE-T3301-13	0.8	2.4	0.8	1.54 / 1.47	759	3
VE-T3302-13	1.6	3.2	0.8	0.98 / 0.91	759	6
VE-T3302-23	1.6	4.8	1.6	1.54 / 1.47	759	6
VE-T3303-13	2.4	4	0.8	0.77 / 0.7	759	6
VE-T3303-23	2.4	5.6	1.6	1.26 / 1.12	759	6
VE-T3304-13	3.2	4.8	0.8	0.63 / 0.56	508	10
VE-T3304-23	3.2	6.4	1.6	0.98 / 0.91	759	13
VE-T3305-13	4	5.6	0.8	0.49 / 0.42	254	19
VE-T3306-13	4.8	6.4	0.8	0.49 / 0.42	127	25
VE-T3306-23	4.8	8	1.6	0.77 / 0.7	635	13
VE-T3306-33	4.8	9.6	2.4	0.98 / 0.91	759	10
VE-T3306-43	4.8	11.2	3.2	1.26 / 1.12	759	10
VE-T3308-13	6.4	8	0.8	0.35 / 0.28	254	38
VE-T3308-23	6.4	9.6	1.6	0.63 / 0.56	381	19
VE-T3308-33	6.4	11.2	2.4	0.84 / 0.77	759	16
VE-T3308-43	6.4	12.8	3.2	0.98 / 0.91	759	16
VE-T3310-23	8	11.2	1.6	0.49 / 0.42	127	32
VE-T3310-33	8	12.8	2.4	0.70 / 0.63	508	16
VE-T3312-23	9.5	12.7	1.6	0.63 / 0.56	127	38
VE-T3312-33	9.5	14.3	2.4	0.77 / 0.70	508	25
VE-T3312-43	9.5	15.9	3.2	0.84 / 0.77	759	25
VE-T3314-23	11.1	14.3	1.6	0.28 / 0.21	508	38
VE-T3314-33	11.1	15.9	2.4	0.56 / 0.49	254	45
VE-T3316-23	12.7	15.9	1.6	0.35 / 0.28	254	76
VE-T3316-33	12.7	17.5	2.4	0.42 / 0.36	127	45
VE-T3316-43	12.7	19.1	3.2	0.63 / 0.56	381	38
VE-T3320-33	15.9	20.7	2.4	0.42 / 0.3	127	76
VE-T3320-43	15.9	22.3	3.2	0.49 / 0.36	254	63
VE-T3324-43	19	25.4	3.2	0.49 / 0.36	254	63
VE-T3332-43	25.4	31.8	3.2	0.35 / 0.28	254	127
VE-T3340-43	31.8	38.2	3.2	0.35 / 0.28	254	152
VE-T3348-83	38.1	50.9	6.4	0.42 / 0.35	254	177
metric size						
VE-T330A-053	1	2	0.5	0.61 / 0.54	759	9
VE-T330B-103	2	4	1	0.61 / 0.54	759	13
VE-T330H-153	5	8	1.5	0.47 / 0.4	635	19
VE-T330I-153	6	9	1.5	0.4 / 0.34	381	22
VE-T330L-153	7	10	1.5	0.4 / 0.34	254	25
VE-T330N-203	8	12	2	0.4 / 0.34	381	38
VE-T330P-203	10	14	2	0.37 / 0.3	127	51
VE-T330Q-203	12	16	2	0.34 / 0.27	127	63
VE-T330S-303	18	24	3	0.34 / 0.27	127	76

## INDUSTRIAL HOSES - TYGON®



### TYGON® 3370 I.B.

**Max. working temp.:** +160°C  
**Brittle temp.:** -80°C  
**Hardness:** 70° Shore (A)  
**Density:** 1.18 g/cm³  
**Key features:** Pharmacology and biotechnology application

Translucent, flexible, silicone tubing with polyester braid reinforcement. The inner wall surface is manufactured using platinum curing process. It is non-toxic, non-haemolytic and non-pyrogenic. The tubing features excellent flow rates, facilitates cleaning, prevents bacteria build-up and growth. Withstands repeated CIP and SIP cleaning and sterilization. Steam, ethylene oxide or radiation sterilization up to 5 MRad. Meets the requirements: FDA 21 CFR Part 177.2600; NSF-51; 3-A No18-01. Tubing length 15 m.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20°C / 160°C [bar]	vacuum 20°C [mm Hg]	bending radius [mm]
VE-T1306-43	4.8	11.3	3.25	11.56 / 8.5	759	6
VE-T1308-43	6.4	13.2	3.4	10.2 / 7.14	759	13
VE-T1312-43	9.6	17.6	3.96	8.84 / 6.46	759	19
VE-T1316-63	12.7	21.5	4.4	8.5 / 6.12	759	32
VE-T1320-63	15.9	24.9	4.5	7.48 / 5.44	759	38
VE-T1324-63	19	29.2	5.08	6.8 / 5.1	759	57
VE-T1332-63	25.4	35.3	4.96	4.76 / 3.4	381	89
VE-T1340-63	31.8	41.6	4.9	3.74 / 2.72	254	146
VE-T1348-66	38.1	47.9	5	2.72 / 2.04	127	171



### PHARMA PURE

**Max. working temp.:** +135°C  
**Brittle temp.:** -67°C  
**Hardness:** 65° Shore (A)  
**Density:** 0.92 g/cm³  
**Key features:** Pharmacology, peristaltic pumps

Lightweight, flexible tubing with very smooth inner surface which prevents impurities build-up. The tubing is only very slightly permeable to gases. Steam (withstands repeated autoclave sterilization), ethylene oxide or radiation sterilization up to 2.5 MRad. Meets the requirements of FDA 21 CFR Part 177.2600, USP class VI, European Pharmacopoeia 3.2.9. Tubing length 7.62 m.

code	I.D. [mm]	O.D. [mm]	working press. 20°C / 80°C [bar]	vacuum 20°C / 80°C [bar]	bending radius [mm]
VE-AL242606	0.8	4.0	2.6 / 1.6	1 / 1	13
VE-AL242002	1.6	3.2	1.4 / 0.9	1 / 1	13
VE-AL242003	1.6	4.8	1.9 / 1.2	1 / 1	13
VE-AL242005	2.4	5.6	1.9 / 0.9	1 / 1	13
VE-AL242006	3.2	4.8	0.7 / 0.6	1 / 0.3	19
VE-AL242007	3.2	6.4	1.6 / 0.8	1 / 1	19
VE-AL242012	4.8	8.0	1.4 / 0.7	1 / 0.85	19
VE-AL242017	6.4	9.6	1 / 0.5	1 / 0.51	32
VE-AL242019	6.4	12.7	1.8 / 0.9	1 / 1	32
VE-AL242022	8.0	11.1	0.9 / 0.5	1 / 0.34	38
VE-AL242027	9.6	12.7	0.7 / 0.4	0.51 / 0.17	44
VE-AL242029	9.6	15.9	1.3 / 0.7	1 / 1	38
VE-AL242038	12.7	19.1	1 / 0.5	1 / 0.68	64
VE-AL242046	15.9	22.3	0.8 / 0.4	0.85 / 0.33	70
VE-AL242053	19.1	25.4	0.7 / 0.3	0.51 / 0.17	95

## INDUSTRIAL HOSES - TYGON®



### PHARMED® BPT

**Max. working temp.:** +135°C

**Brittle temp.:** -75°C

**Hardness:** 64° Shore (A)

**Density:** 0.98 g/cm³

**Key features:** Pharmacology and medical application, peristaltic pumps

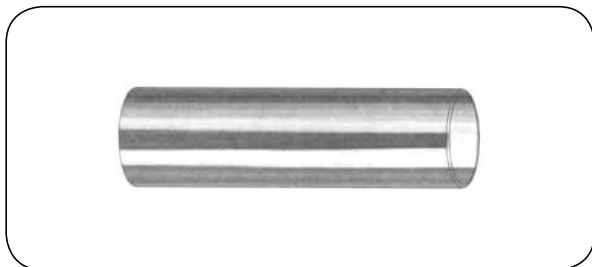
Beige, flexible tubing manufactured in compliance with ISO 10993 standard ensures full biological safety. The tubing can be exposed to gamma radiation (isotope of cobalt 60) up to 5 MRad with no significant change to physical properties. Steam sterilization and ethylene oxide sterilization is also acceptable. Complies with FDA 21 CFR 177.2600, NSF-51, USP class VI and ISO 10993. Tubing length 7.5 m.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20°C / 80°C [bar]	vacuum 20°C [mm Hg]	bending radius [mm]
VE-R650E-26BPT	0.5	3.7	1.6	7.93 / 4.94	759	3
VE-R6501-26BPT	0.8	4	1.6	5.37 / 3.37	759	3
VE-R6502-16BPT	1.6	3.2	0.8	1.65 / 0.96	759	6
VE-R6502-26BPT	1.6	4.8	1.6	2.96 / 1.86	759	3
VE-R6503-26BPT	2.4	5.6	1.6	2.06 / 1.31	759	6
VE-R6504-16BPT	3.2	4.8	0.8	0.89 / 0.55	635	12
VE-R6504-26BPT	3.2	6.4	1.6	1.65 / 1.03	759	12
VE-R6506-26BPT	4.8	8	1.6	1.17 / 0.68	759	16
VE-R6508-26BPT	6.4	9.5	1.6	0.89 / 0.55	635	22
VE-R6508-46BPT	6.4	12.7	3.2	1.65 / 1.03	759	19
VE-R6510-26BPT	8	11.2	1.6	0.75 / 0.41	381	35
VE-R6512-26BPT	9.5	12.7	1.6	0.62 / 0.34	254	34
VE-R6512-46BPT	9.5	15.9	3.2	1.17 / 0.68	759	29
VE-R6516-46BPT	12.7	19.1	3.2	0.68 / 0.55	635	29
VE-R6520-46BPT	15.9	22.2	3.2	0.75 / 0.41	381	70
VE-R6524-46BPT	19	25.4	3.2	0.62 / 0.34	254	89



Silicone and TYGON® hoses are also available as hose assemblies with fittings according to customer specifications.

## INDUSTRIAL HOSES - TYGON®



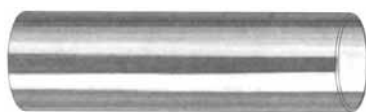
### TYGON® ND100-65

**Max. working temp.:** +74°C  
**Brittle temp.:** -42°C  
**Hardness:** 65° Shore (A)  
**Density:** 1.19 g/cm³  
**Key features:** Medical application, peristaltic pumps

Clear as glass, flexible, phthalate-free and biocompatible tubing. Manufactured in compliance with ISO 10993 standard ensures full biological safety. Because of its construction, the tubing is particularly recommended for blood transport, dialysis equipment, wound drainage, etc. Steam, ethylene oxide or radiation sterilization up to 5 MRad. Meets the requirements of USP Class VI, European Pharmacopoeia 3.1.1.2, ISO 10993 as well as European REACH standards. Tubing length 15 m.

code	I.D. [mm]	tolerance [mm]	O.D. [mm]	tolerance [mm]	wall thickness [mm]	working press. 20°C [bar]	vacuum 20°C [mm Hg]	bending radius [mm]
VE-ADF00001	0.8	0.05	2.4	0.08	0.8	6.84	759	3
VE-ADF00002	1.6	0.08	3.2	0.13	0.8	3.74	759	6
VE-ADF00003	1.6	0.08	4.8	0.13	1.6	6.84	759	3
VE-ADF00004	2.4	0.08	4	0.13	0.8	2.04	759	10
VE-ADF00005	2.4	0.08	5.6	0.13	1.6	4.76	759	6
VE-ADF00006	3.2	0.13	4.8	0.13	0.8	2.04	635	13
VE-ADF00007	3.2	0.13	6.4	0.13	1.6	3.74	759	10
VE-ADF00009	4	0.13	5.6	0.13	0.8	1.7	381	19
VE-ADF00010	4	0.13	7.2	0.13	1.6	3.06	759	13
VE-ADF00011	4.8	0.13	6.4	0.13	0.8	1.36	254	25
VE-ADF00012	4.8	0.13	8	0.2	1.6	2.72	759	16
VE-ADF00013	4.8	0.13	9.6	0.2	2.4	3.74	759	13
VE-ADF00014	4.8	0.13	11.2	0.2	3.2	4.76	759	10
VE-ADF00016	6.4	0.13	8	0.2	0.8	1.22	127	41
VE-ADF00017	6.4	0.13	9.6	0.2	1.6	2.04	635	25
VE-ADF00018	6.4	0.13	11.2	0.2	2.4	3.06	759	19
VE-ADF00019	6.4	0.13	12.8	0.25	3.2	3.74	759	15
VE-ADF00022	8	0.2	11.2	0.2	1.6	1.7	381	34
VE-ADF00023	8	0.2	12.8	0.25	2.4	2.38	759	25
VE-ADF00024	8	0.2	14.4	0.25	3.2	3.06	759	22
VE-ADF00027	9.5	0.2	12.7	0.25	1.6	1.36	254	44
VE-ADF00028	9.5	0.2	14.3	0.25	2.4	2.04	635	34
VE-ADF00029	9.5	0.2	15.9	0.25	3.2	2.72	759	28
VE-ADF00032	11.1	0.2	14.3	0.25	1.6	1.36	203	57
VE-ADF00033	11.1	0.2	15.9	0.25	2.4	1.7	457	44
VE-ADF00034	11.1	0.2	17.5	0.25	3.2	2.38	759	35
VE-ADF00036	12.7	0.25	15.9	0.25	1.6	1.22	152	73
VE-ADF00037	12.7	0.25	17.5	0.25	2.4	1.70	381	54
VE-ADF00038	12.7	0.25	19.1	0.25	3.2	2.04	635	44
VE-ADF00041	14.3	0.25	19.1	0.25	2.4	1.36	254	63
VE-ADF00045	15.9	0.25	20.7	0.25	2.4	1.36	229	76
VE-ADF00046	15.9	0.25	22.3	0.25	3.2	1.7	381	69
VE-ADF00047	15.9	0.25	23.9	0.25	4	2.04	635	51
VE-ADF00053	19	0.25	25.4	0.38	3.2	1.36	254	83
VE-ADF00059	22.2	0.25	28.6	0.38	3.2	1.36	203	105
VE-ADF00062	25.4	0.38	31.8	0.38	3.2	1.22	127	130

## INDUSTRIAL HOSES - TYGON®

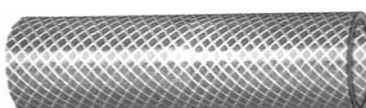


### VERSILON™ E-1000

**Max. working temp.:** +52°C  
**Brittle temp.:** -55°C  
**Hardness:** 40° Shore (A)  
**Density:** 1.1 g/cm³  
**Key features:** General purpose laboratory hose

Transparent, plasticizer-free, soft and flexible tubing highly resistant to aggressive chemicals. Because the tubing has a very low hardness level, it is ideal for low torque or battery-powered peristaltic pumps. Ethylene oxide sterilization. Suitable for viscous media. Meets the requirements of FDA, NSF-51, REACH standards. Tubing length 15 m.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 23°C [bar]	vacuum 23°C [mm Hg]	bending radius [mm]
VE-ADK00003	1.6	4.8	1.6	1.8	760	3.2
VE-ADK00007	3.2	6.4	1.6	1.1	760	9.5
VE-ADK00012	4.8	7.9	1.6	0.7	381	15.9
VE-ADK00017	6.4	9.5	1.6	0.6	178	25.4
VE-ADK00019	6.4	12.7	3.2	0.9	760	15.9
VE-ADK00022	7.9	11.1	1.6	0.5	127	34.92
VE-ADK00027	9.5	12.7	1.6	0.5	76	44.45
VE-ADK00029	9.5	15.9	3.2	0.8	381	28.57
VE-ADK00036	12.7	15.9	1.6	0.4	51	73.02
VE-ADK00038	12.7	19.0	3.2	0.6	178	44.45



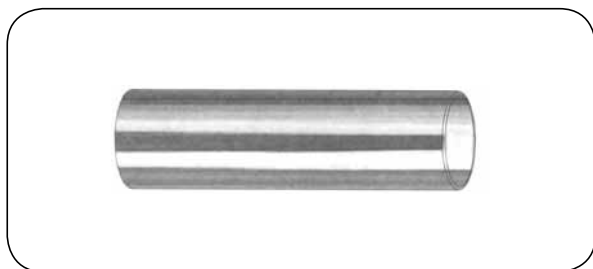
### VERSILON™ C-544A I.B.

**Max. working temp.:** +82°C  
**Brittle temp.:** -73°C  
**Hardness:** 85° Shore (A)  
**Density:** 1.12 g/cm³  
**Key features:** General purpose polyurethane hose

Translucent, flexible tubing with polyester braid reinforcement. A superb standard of consistency of dimensions in every production process facilitates proper and leak-tight assembly. High tear strength and excellent abrasion resistance make it an ideal solution for fuel and lubricant lines, pneumatic lines, pneumatic transfer of abrasive products, cable jacketing and many other industrial applications. Meets the requirements of FDA 21 CFR, 177.1680 i 177.2600 and NSF-61. Tubing length 30 m.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20°C / 80°C [bar]	vacuum 80°C [mm Hg]	bending radius [mm]
VE-AZY02008	3.2	9.6	3.2	15.51 / 10.34	759	13
VE-AZY02019	6.4	12.8	3.2	18.96 / 10.34	759	19
VE-AZY02029	9.5	15.9	3.2	14.13 / 7.93	759	38
VE-AZY02038	12.7	19.1	3.2	13.44 / 7.58	759	51
VE-AZY02046	15.9	22.3	3.2	12.07 / 7.24	635	76
VE-AZY02054	19	27	4	10.34 / 6.89	635	89
VE-AZY02064	25.5	35.1	4.8	8.27 / 5.52	381	148
VE-AZY00071	31.8	44.6	6.4	6.55 / 4.48	508	152
VE-AZY00074	38.1	50.9	6.4	5.52 / 3.45	381	190
VE-AZY00078	50.8	63.6	6.4	4.83 / 2.76	254	330

## INDUSTRIAL HOSES - TYGON®



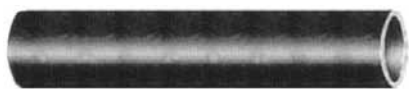
### VERSILON™ C-210A

**Max. working temp.:** +93°C  
**Brittle temp.:** -73°C  
**Hardness:** 82° Shore (A)  
**Density:** 1.2 g/cm³  
**Key features:** General purpose polyurethane hose

Transparent, flexible tubing with high tear strength and abrasion resistance. A superb standard of consistency of dimensions in every production process facilitates proper and leak-tight assembly. Widely used in many branches of industry and in particular, in fuel and lubricant lines, pneumatic lines, pneumatic transfer of abrasive products or as cable jacketing. Tubing length 30 m.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20°C / 80°C [bar]	vacuum 80°C [mm Hg]	bending radius [mm]
VE-T9502-14	1.6	3.2	0.8	4.83 / 2.76	759	5
VE-T9504-14	3.2	4.8	0.8	3.1 / 1.72	759	13
VE-T9504-24	3.2	6.4	1.6	5.1 / 3.1	759	8
VE-T9506-14	4.8	6.4	0.8	2.34 / 1.31	508	25
VE-T9506-24	4.8	8	1.6	3.86 / 2.28	759	16
VE-T9506-34	4.8	9.6	2.4	4.83 / 3.03	759	11
VE-T9508-14	6.4	8	0.8	1.93 / 0.83	127	40
VE-T9508-24	6.4	9.6	1.6	2.90 / 1.72	759	24
VE-T9508-34	6.4	11.2	2.4	4 / 1.93	759	17
VE-T9508-44	6.4	12.8	3.2	4.83 / 3.1	759	14
VE-T9510-24	8	11.2	1.6	2.48 / 1.52	759	49
VE-T9512-24	9.5	12.7	1.6	2.34 / 1.31	635	44
VE-T9512-34	9.5	14.3	2.4	3.1 / 1.86	759	33
VE-T9512-44	9.5	15.9	3.2	3.72 / 2.28	759	27
VE-T9514-34	11.1	15.9	2.4	2.76 / 1.45	759	43
VE-T9514-44	11.1	17.5	3.2	3.38 / 2	759	35
VE-T9516-24	12.7	15.9	1.6	1.79 / 0.97	127	73
VE-T9516-34	12.7	17.5	2.4	2.48 / 1.24	759	54
VE-T9516-44	12.7	19.1	3.2	3.17 / 1.86	759	44
VE-T9520-24	15.9	19.1	1.6	1.65 / 0.76	127	105
VE-T9520-34	15.9	20.7	2.4	2.21 / 1.1	381	76
VE-T9520-44	15.9	22.3	3.2	2.62 / 1.45	759	60
VE-T9524-34	19	23.8	2.4	1.79 / 0.9	127	102
VE-T9524-44	19	25.4	3.2	2.28 / 1.38	635	83
VE-T9532-44	25.4	31.8	3.2	1.93 / 0.97	254	130

## INDUSTRIAL HOSES - TYGON®



### TYGON® A-60-G

**Max. working temp.:** +135°C

**Brittle temp.:** -60°C

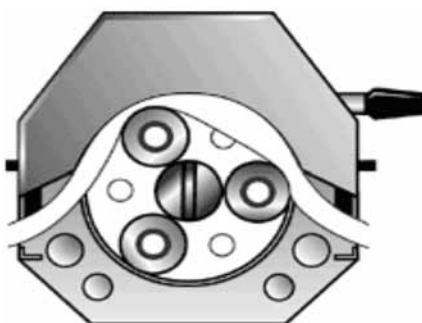
**Hardness:** 61° Shore (A)

**Density:** 0.98 g/cm³

**Key features:** General purpose, peristaltic pumps

Black, flexible tubing resistant to abrasion, ageing, ozone and heat radiation. The tubing features excellent fatigue strength, very low permeation rate and very high resistance to inorganic compounds (e.g. acids, bases). Widely used in vacuum applications. Tubing length 15 m.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20°C / 80°C [bar]	vacuum 80°C [mm Hg]	bending radius [mm]
VE-R6002-23	1.6	4.8	1.6	2.34 / 1.45	759	6
VE-R6004-23	3.2	6.4	1.6	1.31 / 0.83	759	13
VE-R6004-43	3.2	9.6	3.2	2.34 / 1.45	759	13
VE-R6006-23	4.8	8	1.6	0.9 / 0.55	759	19
VE-R6006-33	4.8	9.6	2.4	1.31 / 0.83	759	13
VE-R6006-63	4.8	14.4	4.8	2.34 / 1.45	759	6
VE-R6008-23	6.4	9.6	1.6	0.69 / 0.41	401	22
VE-R6008-33	6.4	11.2	2.4	1.03 / 0.62	759	19
VE-R6008-43	6.4	12.8	3.2	1.31 / 0.83	759	19
VE-R6008-63	6.4	16	4.8	1.79 / 1.1	759	13
VE-R6010-23	8	11.2	1.6	0.55 / 0.34	256	32
VE-R6010-33	8	12.8	2.4	0.83 / 0.48	635	25
VE-R6010-83	8	20.8	6.4	1.93 / 1.17	759	13
VE-R6012-23	9.5	12.7	1.6	0.48 / 0.28	178	35
VE-R6012-33	9.5	14.3	2.4	0.69 / 0.41	381	38
VE-R6012-43	9.5	15.9	3.2	0.9 / 0.55	704	29
VE-R6016-33	12.7	17.5	2.4	0.55 / 0.31	254	57
VE-R6016-43	12.7	19.1	3.2	0.69 / 0.41	396	29
VE-R6020-33	15.9	20.7	2.4	0.48 / 0.28	127	83
VE-R6020-43	15.9	22.3	3.2	0.55 / 0.34	251	70
VE-R6024-43	19	25.4	3.2	0.48 / 0.28	175	89
VE-R6032-43	25.4	31.8	3.2	0.41 / 0.21	127	127





# INDUSTRIAL HOSES - TYGON®



## VERSILON™ GSR

**Material:** Natural red rubber  
**Max. working temp.:** +70°C  
**Brittle temp.:** -40°C  
**Hardness:** 45° Shore (A)  
**Density:** 1.13 g/cm³  
**Key features:** General purpose

Lightweight, ultra-flexible tubing. Abrasion resistance and very low permeation rate make the tubing suitable for a range of industrial applications. GSR SEMI-VACUUM and GSR VACUUM hoses are intended for vacuum systems. Steam sterilization and ethylene oxide sterilization. Meets the requirements of FDA.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working pressure [bar]	bending radius [mm]	standard length [m]
GSR STANDARD						
VE-710047	1	3	1	0.82	3	25
VE-710050	2	4	1	0.5	6	25
VE-710054	3	5	1	0.46	12	25
VE-710056	3	6	1.5	0.64	13	25
VE-710058	4	6	1	0.36	12	25
VE-710060	4	7	1.5	0.54	12	25
VE-710063	4	8	2	0.51	18	25
VE-710070	5	8	1.5	0.46	20	25
VE-710078	6	9	1.5	0.37	33	25
VE-710082	6	10	2	0.45	18	25
VE-710095	7	10	1.5	0.31	33	25
VE-710098	7	11	2	0.27	37	25
VE-710107	8	12	2	0.37	32	25
VE-710115	9	13	2	0.36	58	25
VE-710117	10	14	2	0.37	46	25
VE-710127	12	17	2.5	0.28	63	25
VE-710128	12	18	3	0.31	42	25
VE-710140	16	22	3	0.31	90	25
GSR SEMI-VACUUM						
VE-710064	4	9	2.5	0.63	17	25
VE-710072	5	10	2.5	0.61	17	25
VE-710084	6	12	3	0.62	16	25
VE-710089	6	16	5	1.05	19	25
VE-710100	7	15	4	0.65	15	25
VE-710101	7	17	5	0.88	12	25
VE-710109	8	14	3	0.51	25	25
VE-710110	8	18	5	0.53	15	25
VE-710120	10	20	5	0.65	21	25
VE-710130	12	24	6	0.72	23	25
VE-710135	15	30	7.5	0.65	36	10
GSR VACUUM						
VE-710066	4	14	5	1.03	9	25
VE-710074	5	15	5	0.95	7	25
VE-710091	6	18	6	1.12	9	25
VE-710114	8	20	6	0.82	12	25
VE-710123	10	30	10	0.67	18	10
VE-710139	15	35	10	0.63	28	10
VE-710151	20	45	12.5	0.61	63	10

## INDUSTRIAL HOSES - TYGON®

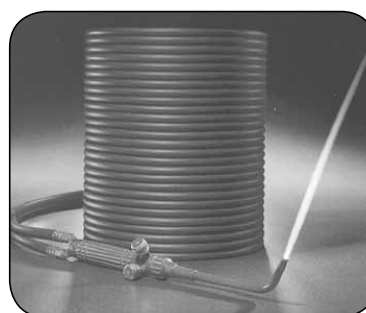


### VERSILON™ GA

**Material:** Light brown natural rubber  
**Max. working temp.:** +70°C  
**Brittle temp.:** -40°C  
**Hardness:** 40° Shore (A)  
**Density:** 0.98 g/cm³  
**Key features:** General purpose, 500% elongation

Lightweight, flexible tubing with properties similar to latex rubber. Can be used as its substitute. Easy to mount, used in laboratories, for blood and tissue testing, for dispensing cleaners. Resistant to abrasion. Steam sterilization and ethylene oxide sterilization. Compliant with FDA.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working pressure [bar]	bending radius [mm]	standard length [m]
VE-702030	2	4	1	0.5	7	50
VE-702075	3	5	1	0.46	11	50
VE-702195	4	6	1	0.36	12	50
VE-702210	4	7	1.5	0.54	12	50
VE-702225	4	8	2	0.51	7	50
VE-702315	5	8	1.5	0.46	18	50
VE-702330	5	9	2	0.61	14	50
VE-702345	5	10	2.5	0.63	13	50
VE-702405	6	9	1.5	0.37	29	50
VE-702420	6	10	2	0.45	19	50
VE-702465	7	10	1.5	0.31	37	25
VE-702480	7	11	2	0.27	26	25
VE-702495	7	13	3	0.75	20	25
VE-702525	8	12	2	0.37	28	25
VE-702555	8	16	4	0.61	17	25
VE-702585	10	14	2	0.37	50	25
VE-702600	10	15	2.5	0.34	40	25
VE-702615	12	17	2.5	0.28	52	25
VE-702630	15	21	3	0.33	70	25
VE-702645	18	24	3	0.32	99	25
VE-702660	20	27	3.5	0.24	99	25



## INDUSTRIAL HOSES - TYGON®



### VERSILON™ NITRILE

**Material:** Black NBR rubber  
**Max. working temp.:** +100°C  
**Brittle temp.:** -20°C  
**Hardness:** 65° Shore (A)  
**Density:** 1.45 g/cm³  
**Key features:** General purpose

Lightweight, flexible tubing with superb resistance to aliphatic hydrocarbons, good resistance to aromatic solvents and alcohols. Low gas permeability rate. Used in fuel installations, gas and lubricant lines and for petrochemical products transfer. Average resistance to ageing and light.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working pressure [bar]	bending radius [mm]	standard length [m]
VE-730020	4	7	1.5	1.06	11	50
VE-730080	5	8	1.5	0.96	21	50
VE-730100	6	9	1.5	0.75	28	50
VE-730110	6	10	2	0.9	20	50
VE-730160	7	10	1.5	0.65	34	50
VE-730200	8	12	2	0.75	33	50
VE-730220	10	14	2	0.72	53	50
VE-730240	12	17	2.5	0.54	68	50



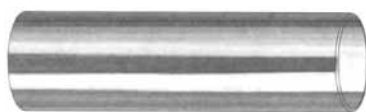
### TYGON® F4040-A

**Max. working temp.:** +74°C  
**Brittle temp.:** -37°C  
**Hardness:** 57° Shore (A)  
**Density:** 1.26 g/cm³  
**Key features:** For petrochemical products

Transparent, yellow, flexible tubing resistant to ageing, ozone, UV radiation, swelling and hardening caused by washing out of plasticizers. Very low permeation rate of aromatic hydrocarbons. Tubing length 15 m.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20°C [bar]	vacuum 20°C [mm Hg]	bending radius [mm]
VE-T4003-C3	2	3.5	0.8	2.76	759	6
VE-T4003-D3	2.4	4.8	1.2	3.45	759	6
VE-T4004-23	3.2	6.4	1.6	3.45	759	10
VE-T4006-23	4.8	8	1.6	2.41	759	16
VE-T4008-23	6.4	9.6	1.6	2.07	559	25
VE-T4010-23	8	11.2	1.6	1.72	356	35
VE-T4012-23	9.5	12.7	1.6	1.38	254	48
VE-T4012-43	9.5	15.9	3.2	2.41	759	29
VE-T4014-23	11.1	14.3	1.6	1.03	178	60
VE-T4016-23	12.7	15.9	1.6	1.03	127	73
VE-T4016-43	12.7	19.1	3.2	2.07	559	44
VE-T4020-43	15.9	22.3	3.2	1.72	356	64
VE-T4024-43	19	25.4	3.2	1.38	254	83

## INDUSTRIAL HOSES - TYGON®

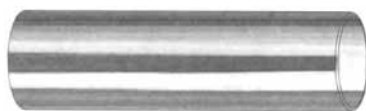


### TYGON® LP-1100

**Max. working temp.:** +82°C  
**Brittle temp.:** -29°C  
**Hardness:** 69° Shore (A)  
**Density:** 1.26 g/cm³  
**Key features:** For petrochemical products with ethanol content up to 100%

Transparent, yellow, flexible tubing with fluoropolymer internal layer, resistant to swelling and hardening caused by liquid hydrocarbons or acid gases. Very low permeation rate of aromatic hydrocarbons. Meets the requirements of EPA and CARB standards. Resistant to ozone and UV radiation. Perfect as a fuel line in chainsaws, lawnmowers, etc. Tubing length 15 m.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 23°C [bar]	vacuum 23°C [mm Hg]	bending radius [mm]
VE-AY600165	2.4	4.8	1.2			
VE-AY600007	3.2	6.4	1.6			
VE-AY600012	4.8	8	1.6			
VE-AY600017	6.4	9.6	1.6			



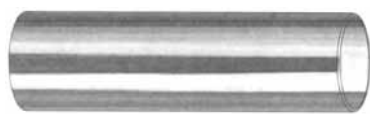
### TYGON® LP-1200

**Max. working temp.:** +82°C  
**Brittle temp.:** -28°C  
**Hardness:** 78° Shore (A)  
**Density:** 1.27 g/cm³  
**Key features:** For petrochemical products with ethanol content up to 100%

Transparent, flexible tubing resistant to swelling and hardening caused by washing out of plasticizers. Very low permeation rate of aromatic hydrocarbons. Meets the requirements of EPA and CARB standards. Resistant to UV radiation: complies with the requirements of ANSI B175.1 Annex D standard. Perfect as a fuel line in chainsaws, lawnmowers, etc. Tubing length 15 m.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 23°C [bar]	vacuum 23°C [mm Hg]	bending radius [mm]
VE-ALR00700	2.03	3.56	0.77	4.82	730	6
VE-ALR00165	2.4	4.8	1.2	4.48	730	6
VE-ALR00007	3.2	6.4	1.6	4.13	730	10
VE-ALR00012	4.8	8	1.6	3.10	730	13
VE-ALR00017	6.4	9.6	1.6	2.06	730	17

## INDUSTRIAL HOSES - TYGON®

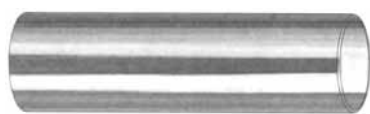


### TYGON® LP-1500

**Max. working temp.:** +85°C  
**Brittle temp.:** -40°C  
**Hardness:** 35° Shore (A)  
**Density:** 1.18 g/cm³  
**Key features:** For petrochemical products with ethanol content max. 10%

Transparent, flexible tubing resistant to wear and kinking. Very low permeation rate of aromatic hydrocarbons. Meets the requirements of EPA and CARB standards. Resistant to UV radiation: complies with the requirements of ANSI B175.1 Annex D standard. Perfect as a fuel line in chainsaws, lawnmowers, etc. Tubing length 15 m.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 23°C [bar]	vacuum 23°C [mm Hg]	bending radius [mm]
VE-AY700165	2.4	4.8	1.2	11.03	759	13
VE-AY700007	3.2	6.4	1.6	7.23	759	16
VE-AY700017	6.4	9.6	1.6	4.48	759	63
VE-AY700038	12.7	19	3.2	3.44	759	127



### TYGON® 2375

**Max. working temp.:** +54°C  
**Brittle temp.:** -75°C  
**Hardness:** 75° Shore (A)  
**Density:** 0.90 g/cm³  
**Key features:** Chemical resistance

Transparent, flexible tubing resistant to acids, bases, salts, ketones and alcohols. The material of the tubing is completely free of plasticizers and thus prevents potential contamination of the fluid flowing through the tubing and its premature failure. The smooth inner surface prevents impurities build-up. Ethylene oxide or radiation sterilization. Complies with FDA 21 CFR 177.1520, REACH, NSF-51 and 10/2011EU. Tubing length 15 m (Ø 25.4 mm - 7.5 m).

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20°C [bar]	vacuum 20°C [mm Hg]	bending radius [mm]
VE-AJK00002	1.6	3.2	0.8	2.76	759	6
VE-AJK00003	1.6	4.8	1.6	4.48	759	3
VE-AJK00004	2.4	4	0.8	1.72	759	6
VE-AJK00007	3.2	6.4	1.6	2.76	759	6
VE-AJK00009	4	5.6	0.8	1.38	759	6
VE-AJK00012	4.8	8	1.6	2.07	759	13
VE-AJK00017	6.4	9.6	1.6	1.38	759	19
VE-AJK00022	8	11.2	1.6	1.38	759	32
VE-AJK00027	9.5	12.7	1.6	1.17	508	38
VE-AJK00029	9.5	15.9	3.2	1.72	759	29
VE-AJK00038	12.7	19.1	3.2	1.72	759	38
VE-AJK00046	15.9	22.3	3.2	1.38	759	63
VE-AJK00053	19	25.4	3.2	1.17	508	70
VE-AJK42064	25.4	35	4.8	1.31	635	83

## INDUSTRIAL HOSES - TYGON®

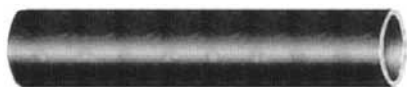


### VERSILON™ F-5500-A

**Max. working temp.:** +204°C  
**Brittle temp.:** -51°C  
**Hardness:** 60° Shore (A)  
**Density:** 1.90 g/cm³  
**Key features:** High chemical and temperature resistance

Opaque, black, flexible tubing made of fluoroelastomer. Resistant to ageing, ozone and weather conditions. Recommended for light-sensitive fluid transfer. The best choice for peristaltic pumps transferring extremely aggressive media. A food grade version is also available. Tubing length 15 m.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20°C / 135°C [bar]	vacuum 135°C [mm Hg]	bending radius [mm]
VE-T5502-13	1.6	3.2	0.8	1.24 / 0.83	759	6
VE-T5504-23	3.2	6.4	1.6	1.31 / 0.9	759	13
VE-T5506-23	4.8	8	1.6	1.03 / 0.62	759	19
VE-T5508-23	6.4	9.6	1.6	0.9 / 0.55	508	25
VE-T5510-23	8	11.2	1.6	0.76 / 0.41	254	32
VE-T5512-23	9.5	12.7	1.6	0.69 / 0.34	127	51



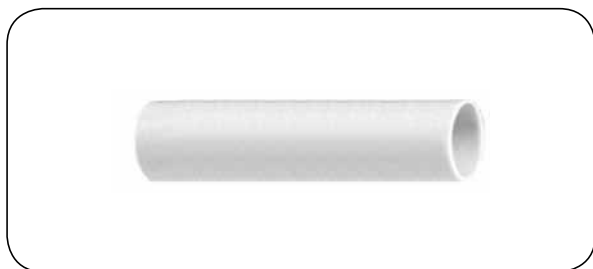
### TYGON® R-3400

**Max. working temp.:** +74°C  
**Brittle temp.:** -21°C  
**Hardness:** 64° Shore (A)  
**Density:** 1.31 g/cm³  
**Key features:** UV resistant

Lightweight, flexible, black tubing resistant to chemicals, ozone and weather conditions. Complies with the requirements of UL 94V-O and UL94HB standard for flammability. Particularly recommended for light-sensitive media, which undergo degradation when affected by light. Also used for computer processor cooling. Tubing length 15 m.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20°C [bar]	vacuum 20°C [mm Hg]	bending radius [mm]
VE-T3402-13	1.6	3.2	0.8	4.14	759	6
VE-T3403-13	2.4	4	0.8	3.1	759	10
VE-T3403-23	2.4	5.6	1.6	5.52	759	6
VE-T3404-23	3.2	6.4	1.6	4.14	759	9
VE-T3405-23	4	7.2	1.6	3.45	759	13
VE-T3406-13	4.8	6.4	0.8	1.72	279	25
VE-T3406-23	4.8	8	1.6	3.1	759	16
VE-T3406-33	4.8	9.6	2.4	4.14	759	13
VE-T3408-23	6.4	9.6	1.6	2.41	635	25
VE-T3408-33	6.4	11.1	2.4	3.45	759	19
VE-T3410-23	8	11.1	1.6	2.07	406	35
VE-T3412-23	9.5	12.7	1.6	1.72	279	44
VE-T3412-43	9.5	15.9	3.2	3.1	759	29
VE-T3414-23	11.1	14.3	1.6	1.38	203	57
VE-T3416-43	12.7	19	3.2	2.41	635	44
VE-T3420-43	15.9	22.2	3.2	2.07	406	60
VE-T3424-43	19	25.4	3.2	1.72	279	83

## INDUSTRIAL HOSES - TYGON®

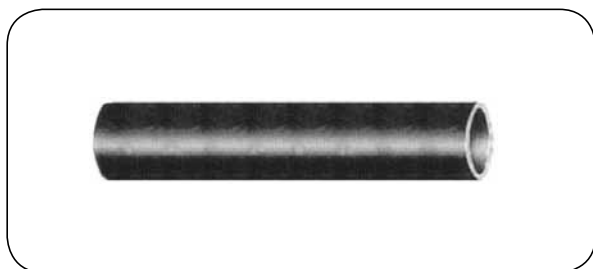


### TYGON® CHEMICAL TUBING

**Max. working temp.:** +74°C  
**Brittle temp.:** -60°C  
**Hardness:** 61° Shore (A)  
**Density:** 0.98 g/cm³  
**Key features:** Chemical hose, peristaltic pumps

Cream-coloured, flexible tubing with inner surface resistant to chemicals, plasticizer-free, unaffected by acids, bases, salts, ketones, alcohols but also resistant to cleaners and sanitizers. Steam, ethylene oxide or radiation sterilization. Meets the requirements of FDA 21 CFR 177.1520. Tubing length 15 m.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20°C / 70°C [bar]	vacuum 20°C [mm Hg]	bending radius [mm]
VE-AD300007	3.2	6.4	1.6	2.28 / 0.97	759	13
VE-AD300012	4.8	8	1.6	2 / 0.69	759	25
VE-AD300017	6.4	9.5	1.6	1.38 / 0.55	759	32
VE-AD300027	9.5	12.7	1.6	0.97 / 0.34	635	51
VE-AD300038	12.7	19.1	3.2	1.1 / 0.55	759	57



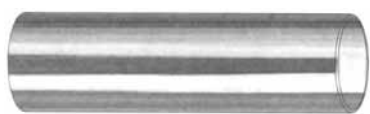
### VERSILON™ ISO

**Max. working temp.:** +200°C (temporarily up to +300°C)  
**Brittle temp.:** -20°C  
**Hardness:** 60° Shore (A) - to dim. 4x6 mm, 70° Shore (A) - from dim. 4x8 mm  
**Density:** 1.90 g/cm³  
**Key features:** High chemical resistance, general purpose

Lightweight, flexible, black tubing made of fluoroelastomer. Resistant to ageing and weather conditions, flame retardant.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	bending radius [mm]	standard length [m]
VE-770060	1	3	1	2	50
VE-770100	1.5	3	0.75	4	50
VE-770130	2	4	1	6	50
VE-770180	3	5	1	11	50
VE-770230	4	6	1	22	50
VE-770250	4	8	2	13	25
VE-770260	5	8	1.5	18	25
VE-770270	5	10	2.5	9	25
VE-770300	6	9	1.5	29	25
VE-770310	6	10	2	19	25
VE-770320	6	12	3	18	25
VE-770350	7	10	1.5	34	25
VE-770360	8	11	1.5	41	25
VE-770380	8	12	2	31	25
VE-770420	10	14	2	48	25
VE-770440	12	17	2.5	45	25
VE-770460	15	21	3	64	5
VE-770470	18	24	3	79	5
VE-770490	20	27	3.5	88	5
VE-770500	25	32	3.5	124	5
VE-770520	30	40	5	132	5

## INDUSTRIAL HOSES - TYGON®



### VERSILON™ SE-200

**Max. working temp.:** +74°C  
**Brittle temp.:** -36°C  
**Hardness:** 66° Shore (A)  
**Density:** 1.21 g/cm³  
**Key features:** High chemical resistance, phthalate free

Transparent tubing with inner layer made of FEP fluoropolymer which is entirely physically and chemically inert. Taste and odour-free. Used for the transfer of highly aggressive chemical products, solvents, methyl ethyl ketone (MEK), etc. Ethylene oxide sterilization. Meets the requirements of FDA 21 CFR Part 177.1550. Tubing length 15 m.

code	I.D. [mm]	O.D. [mm]	wall thickness [mm]	working press. 20°C [bar]	working press. 70°C [bar]	bending radius [mm]
VE-T2003-23	1.6	3.2	0.8	6.89	3.1	13
VE-T2004-23	3.2	6.4	1.6	5.86	2.76	25
VE-T2006-23	4.8	8	1.6	5.17	2.62	38
VE-T2008-23	6.4	9.6	1.6	3.79	2.41	51
VE-T2012-33	9.5	14.3	2.4	3.45	1.72	89
VE-T2016-43	12.7	19.1	3.2	3.1	1.24	102
VE-T2024-43	19	25.4	3.2	2.07	0.83	114



### VERSILON™ PEEK™

**Material:** PEEK (polyetheretherketone)  
**Working temp.:** From -60°C up to +250°C  
 (with peaks up to +310°C)  
**Hardness:** 75° Shore (A)  
**Density:** 1.31 g/cm³  
**Key features:** Pressure resistance

Lightweight, brown capillary tubing with excellent resistance to aggressive chemicals. The smooth inner surface prevents impurities build-up. Suitable for high pressure applications, e.g. chromatography. More resistant to corrosion than stainless steel. Resistant to abrasion and leaching. Can be used for steam transfer applications. The working pressure of this tubing is limited only by the working pressure of the assembled fitting. Meets the requirements of FDA and USP Class VI.

code	I.D. [mm]	tolerance [± mm]	O.D. [mm]	tolerance [± mm]	standard length [m]
VE-ACUPEEK-015	0.15	0.04	1.6	0.08	76
VE-ACUPEEK-025	0.25	0.05	1.6	0.08	76
VE-ACUPEEK-050	0.5	0.05	1.6	0.08	76
VE-ACUPEEK-076	0.76	0.05	1.6	0.08	76
VE-ACUPEEK-102	1.02	0.05	1.6	0.08	76
VE-ACUPEEK-160	1.6	0.1	3.2	0.1	76
VE-ACUPEEK-203	2.03	0.1	3.2	0.1	76



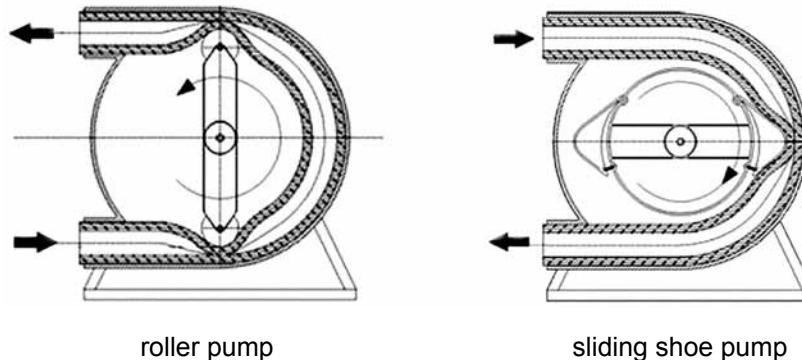
# INDUSTRIAL HOSES - peristaltic pumps

## Peristaltic pump

Peristaltic pump - positive displacement pump of a special construction. There are two main groups of peristaltic pumps: roller pumps and sliding shoe pumps.

In the case of the first group, a rotor with a number of rollers rotates. Each roller compresses the hose walls. Then, once the roller passes, the hose regains its original shape. This type of pumps basically runs dry, only the hose is lubricated with silicone grease.

The second type of pumps operates in a similar way. But in this case, a rotor with a number of shoes rotates. The hose is compressed by shoes. The hose is in a pump chamber with neutral oil (usually glycerin). The oil lubricates and cools the flexible hose as it reduces a major source of heat - friction that occurs between the hose surface and shoes during pumping.



## Hose

Application of peristaltic pumps eliminates any extra connections between hose assemblies and reduces down to the minimum dead volume between the fluid tanks that are pumped. Only one hose assembly can be used for the transfer. Some parts of the hose are then used as an input hose and some parts as a working length in the pump. The walls of the working hose length must be highly flexible so the hose closes or its diameter is at least reduced under roller or shoe compression.

The mechanical features of the hose and material it is made of are determining factors which influence the efficiency of the peristaltic pump:

- flexibility - enables suction of fluids, decides on machine's ability to maintain constant flow, resistance to compression and chemical resistance to the medium determines hose service life and thus pump's reliability.

In order to select a proper hose (spare part) for the pump, the following information must be supplied:








- is the external layer of the hose currently used rough or maybe very smooth,
- what is the internal and external hose diameter,
- how long is the hose,
- are the hose fittings extended, what is their internal and external diameter or length?

## Application

food industry	cosmetic industry	chemical industry	construction industry
milk, yoghurt, ice-cream, fruit juices, beverages, syrup, jam, chocolate, eggs, sauce, oils, fats	soap, toothpaste, shampoo, conditioner, hair dye, lotion, cream	acids and bases in suspension, caustic soda, rubber milk, resin, adhesives, detergents, solvents, colorants, bleachers	sludge, silt, paints, colorants, varnish, distilled water, limewater, mortar, bentonite, cement additives, slurry, wastewater

## INDUSTRIAL HOSES - peristaltic pumps

A special design hose should be properly selected depending on application and medium to be transferred.

picture	hose type	description
	PERISTALTIC / NR	Hose for the transfer of abrasive products, non-aggressive fluids, fluids with solid particles (suspension). Internal layer: black NR rubber, External layer: black NR rubber, Working temp.: from -10°C up to +80°C.
	PERISTALTIC / NR-food	Hose for the transfer of abrasive products, non-aggressive fluids, fluids with solid particles (suspension). A hose version intended for foodstuffs transfer, approved by FDA. Internal layer: white NR rubber, External layer: black NR rubber, Working temp.: from -10°C up to +80°C.
	PERISTALTIC / NBR	Hose for the transfer of oils and fatty products, including mineral oils. Internal layer: black NBR rubber, External layer: black NBR rubber, Working temp.: from -10°C up to +80°C.
	PERISTALTIC / NBR-food	Hose for the transfer of oils and fatty products, including mineral oils. A hose version intended for foodstuffs transfer, approved by FDA. Internal layer: white NBR rubber, External layer: black NBR rubber, Working temp.: from -10°C up to +80°C.
	PERISTALTIC / HNBR	Hose for the transfer of mineral oils, fuels, petrochemical products with aromatic content up to 60%. Internal layer: black HNBR rubber, External layer: black HNBR rubber, Working temp.: from +15°C up to +150°C.
	PERISTALTIC / EPDM	Hose for the transfer of various chemical fluids. Internal layer: black EPDM rubber, External layer: black EPDM rubber, Working temp.: from -10°C up to +100°C.
	PERISTALTIC / CSM	Hose for the transfer of various chemical fluids. Internal layer: black CSM rubber, External layer: black CSM rubber, Working temp.: from -10°C up to +80°C.

# INDUSTRIAL HOSES - heated

## Electrically trace heated hoses

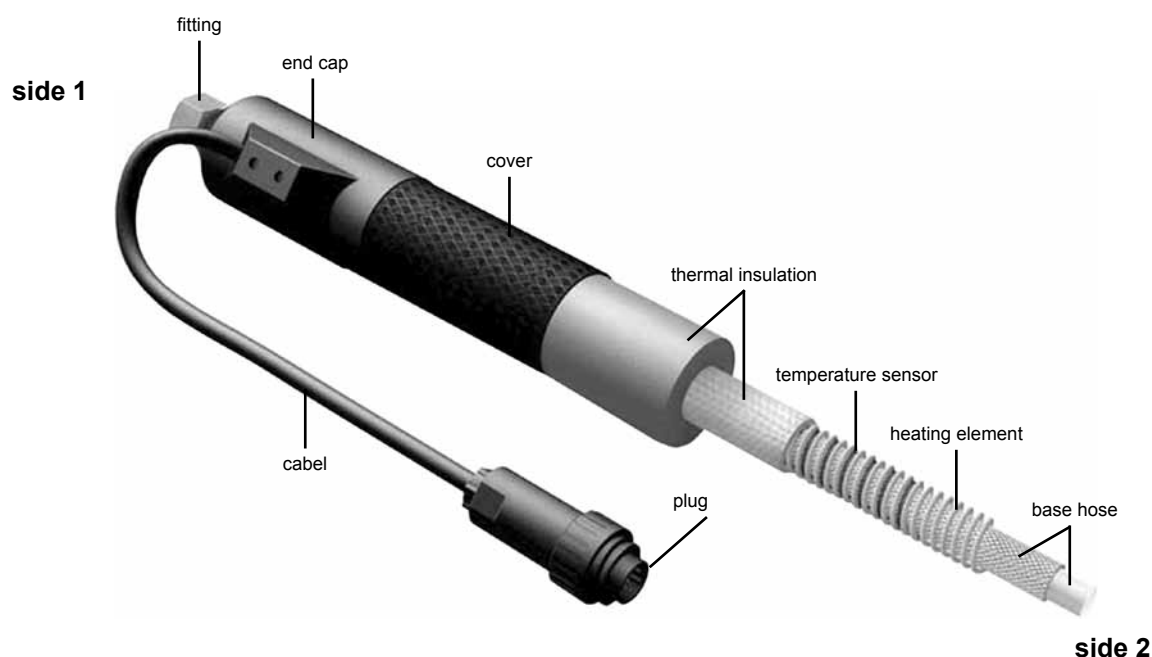


### ETH HL T

Designed for applications where the medium passing through the hose requires heating, melting or maintaining fixed, elevated temperature. It usually concerns: oil, grease, wax, resins, tar, paints, granulated products, adhesives, food products etc. Very popular in dosing systems in all branches of industry. Compatible with the majority of hoses for Hot-Melt system - binding with hot adhesive.

ETH HL T - basic information	
Available lengths	From 0.3 to 50 m depending on a base hose diameter.
Max. working temp.	Depending on a base hose (+250°C for T1, T2 and T3 hoses, +600°C for T5).
Working temp. tolerance	± 10°C.
Thermal insulation	Elastomeric foam up to +100°C. Silicone foam up to +250°C. Fibre glass above +250°C.
Supply voltage	230 V AC/DC (other voltage 12 ÷ 500 V).
Temperature sensor	Thermocouple type J (Fe-CuNi), type K (NiCr-Ni); PT100, NI120 sensors and other.
Connecting cable	1.5 m (as a standard, other lengths available).
Plug	According to customer specifications or without a plug (open ends).
Protection class	IP 54 (EN 60529).





Each heated hose assembly is custom designed and built. Requirements and initial conditions of the project must be supplied by filling in 'ETH Enquiry - Information Card' A4 attachment for P4-04 supplied by TUBES INTERNATIONAL®.



# INDUSTRIAL HOSES - heated

## Electrically trace heated hoses

### ETH HL T - base hoses

picture	hose I.D. [mm]	working pressure [bar]	bending radius [mm]	description
 <b>T 1</b>	4	275	50	Smooth PTFE hose in AISI 304 steel braid. Max. working temperature: +250°C.
	6	240	75	
	8	200	100	
	10	175	120	
	12	150	135	
	16	135	160	
	20	100	200	
	25	80	250	
 <b>T 2</b>	6	275	75	Smooth PTFE hose in two layers of AISI 304 steel braid. Max. working temperature: +250°C.
	8	250	100	
	10	225	120	
	12	200	135	
	16	175	160	
	20	150	200	
	25	130	250	
	32	70	500	
 <b>T 3</b>	6	500	60	Smooth PTFE hose with two layers of helically wound and one braided layer of AISI 304 wire. Max. working temperature: +250°C. Diameters from DN8 to DN25 available as FEP version (max. +200°C).
	8	475	85	
	10	475	110	
	12	450	150	
	16	400	175	
	20	300	200	
	25	275	240	
	32	70	500	
 <b>T 5</b>	4	100	80	Smooth PTFE hose with two layers of helically wound and one braided layer of AISI 304 wire. Max. working temperature: +250°C. Diameters from DN8 to DN25 available as FEP version (max. +200°C).
	6	150	80	
	8	100	120	
	10	100	130	
	12	65	140	
	16	65	160	
	20	40	170	
	25	50	190	
	32	25	260	
	40	40	300	
	50	25	320	

Working pressure correction factor for T type base hoses

hose type	temperature				
	+100°C	+200°C	+250°C	+350°C	+500°C
T1	0.95	0.83	0.6	-	-
T2	0.95	0.83	0.6	-	-
T3	0.95	0.83	0.6	-	-
T5	0.73	0.6	0.55	0.49	0.46

Hoses up to DN200 diameter are supplied.

# INDUSTRIAL HOSES - heated


## Electrically trace heated hoses


### ETH HL T - fittings


Fittings are made of chrome-plated steel (without hexavalent chromium) as a standard. Optionally they can be made of AISI 303 (1.4305), AISI 316Ti (1.4571), AISI 420 (1.2316) stainless steel and with the internal surface covered with PTFE or PFA. Standard fittings: DKR, RSL, RSS, DKL, DKM, DKS, DKJ and BDN.

Also available:

- fittings with imperial and metric male threads,
- fixed and swivel flanges according to DIN (PN-EN 1092-1) and ANSI,
- DIN 11851, SMS or TRICLOVER hygienic fittings.

picture	hose I.D. [mm]	thread size [inch]	description
 <b>DKR</b>	4	1/8, 1/4	Fitting with BSP female thread, metal/metal sealing on 60° cone.
	6	1/4	
	8	3/8	
	10	3/8, 1/2	
	12	1/2, 5/8	
	16	3/4	
	20	1	
	25	1, 1.1/4	
	32	1.1/4, 1.1/2	
	40	1.1/2	


picture	hose I.D. [mm]	thread size [mm]			description
		DKL	DKS	DKM	
 <b>DKL, DKS, DKM</b>	4	12x1.5	-	-	Fitting with metric female thread, metal/metal sealing on 24/60° cone.  DKM - 60° cone.
	6	14x1.5	18x1.5	-	
	8	16x1.5	20x1.5	-	
	10	18x1.5	22x1.5	-	
	12	22x1.5	24x1.5	-	
	16	26x1.5	30x2	-	
	20	30x2	36x2	30x1.5	
	25	36x2	42x2	38x1.5	
	32	45x2	52x2	45x1.5	
	40	52x2	-	52x1.5	


picture	hose I.D. [mm]	thread size [inch]	description
 <b>BDN</b>	4	1/8	Fitting with BSP female thread, flat sealing.
	6	1/4	
	8	3/8	
	10	3/8	
	12	1/2	
	16	3/4	
	20	1	
	25	1	
	32	1.1/4	
	40	1.1/2	

# INDUSTRIAL HOSES - heated

## Electrically trace heated hoses

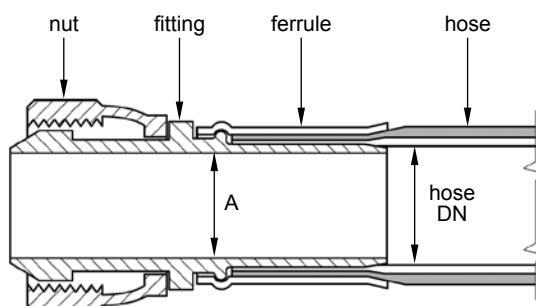
### ETH HL T - fittings

picture	hose I.D. [mm]	thread size [inch]	description
 <p><b>DKJ</b></p>	4	7/16-20	Fitting (JIC) with UNF female thread, metal/metal sealing on 74° cone.
	6	1/2-20	
	8	9/16-18, 1/2-20, 5/8-18	
	10	9/16-18, 3/4-16	
	12	3/4-16	
	16	7/8-14	
	20	1.1/16-12	
	25	1.5/16-12	
	32	1.5/8-12	
	40	1.7/8-12	

picture	hose I.D. [mm]	tube O.D. [mm]		description
		RSL	RSS	
 <p><b>RSL, RSS</b></p>	4	6	8	Fitting with a tube end for assembly of connectors with a cutting ring.
	6	8	10	
	8	10	12	
	10	12	14	
	12	15	16	
	16	18	20	
	20	22	25	
	25	28	30	
	32	35	38	
	40	42	-	

NOTE! Fittings reduce flow rates of the hose.


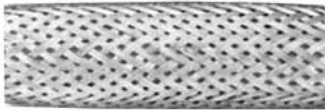
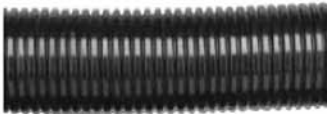


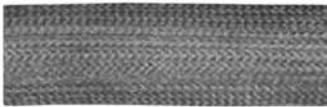

hose DN [mm]	A [mm]
4	3
6	4.5
8	6
10	7.5
12	10
16	12.5
20	16
25	20.1
32	27.5
40	31.5



# INDUSTRIAL HOSES - heated

## Electrically trace heated hoses



### ETH HL T - covers

picture	description
	Lightweight, PA6 polyamide braid. Black as a standard, other colours available. Ambient temperature (short term): up to +150°C.
	Zinc-plated or stainless steel braid ensures excellent resistance against abrasion. Ambient temperature (short term): up to +300°C (+500°C stainless steel).
	Polyamide hose resistant to kinking, fire, halogen free, recommended for operation in industrial robots. Ambient temperature (short term): up to +120°C.
	Polyurethane hose resistant to kinking, fire, halogen free, recommended for operation in industrial robots. Ambient temperature (short term): up to +90°C.
	Relatively heavy, zinc-plated hose resistant to shavings and damage by sharp edges. Ambient temperature (short term): up to +300°C.
	Fibre glass braid, colour: black. Very good resistance against abrasion and welding spatter. Ambient temperature (short term): up to +400°C.
	Silicone rubber braid, colour: black or brown. Features smooth surface, easy cleaning and moisture resistance. Particularly recommended for food, cosmetics and pharmaceutical industry (because of cleaning properties - does not meet FDA requirements) Ambient temperature (short term): up to +200°C.

# INDUSTRIAL HOSES - heated

## Electrically trace heated hoses

### ETH HL T - end caps

picture	description
	Hard caps are made of polyamide reinforced with fibre glass. Firmly assembled on a base hose, they prevent cap abrasion and twisting caused by thermal expansion or hose movement. When the hard cap is used, the bending point of a base hose is moved so that the burden is removed from a critical fitting-hose connection. The hard caps are available for heated hoses up to DN25.
	Soft caps made of silicone or elastomer are more thermally stable compared to hard caps. As the caps are very flexible, they fit tight on the hose so that they need less space than hard caps. Recommended for applications where the required hose length is particularly short.

### Temperature control

Hoses supplied by our company can be divided into the following groups:

- without a temperature controller - regulated by a controller of the customer (TH43 temperature controller, recommended for our hoses or multi-channel HT 55 H controller to connect several hoses can be supplied on request). Hoses are supplied without plugs as a standard. Optionally they can be supplied with plugs (then it is necessary to determine a type of a plug and specify the position of sensor and heating element leads in the plug).
- with HT54 mini-controller built into a hard cap. It comes with a factory preset temperature (no option of temperature setting - fixed temperature value).
- with a self-regulating heating element - no temperature controller is needed, it protects the medium against freezing.



**HT 43**



**HT 55**



**HT 54**

### Special versions

- EX - intended for operation in potentially explosive atmosphere; the base hose is made of antistatic PTFE or steel, temperature sensors and heating elements in Ex version,
- TWIN - heated twin hose, usually used in polyurethane foam production,
- AN - hoses designed for exhaust fumes analysis systems.



# INDUSTRIAL HOSES - heated

## Electrically trace heated hoses



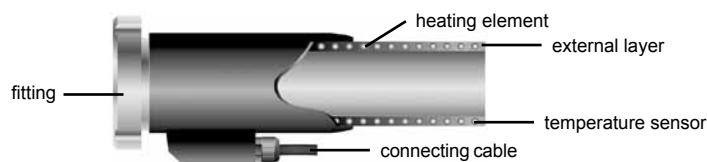
### ETH HL 80

Rubber hose with integrated heating system. A special, flexible heating element is wound onto the internal NBR rubber layer and vulcanized. There is no noticeable difference that distinguishes this hose from standard rubber hoses. A temperature sensor reads off the temperature directly in the hose wall.

Primarily designed to transfer oils, animal and vegetable fats, but also alcoholic beverages and juices.

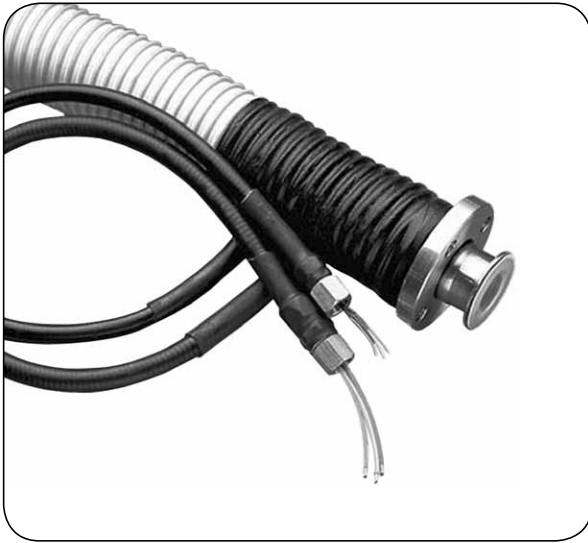
ETH HL 80 - basic information	
Max. length	40 m
Max. working temp.	+80°C
Working temp. tolerance	± 10°C.
Sterilization	CIP sterilization with steam at temperature up to +130°C for a couple of minutes or traditional cleaning.
Standards	Compliant with FDA 21 CFR177.2600 and BfR XXI cat. 2.
Hose construction	Internal layer: smooth NBR rubber. Reinforcement: textile braid. External layer: blue NBR rubber. Suction-delivery hose with steel helix is also available. If working temperature is higher (above +80°C), a hose made of Viton can be supplied.
Hose fittings	Standard: DIN11851 hygienic fitting with a nut (also: TRICLOVER, imperial and metric threads, flanges).
Rated voltage	230 V AC/DC (other voltage 12 ÷ 500 V).
Temperature sensor	PT100.
Connecting cable	1.5 m (as a standard, other lengths available).
Plug	According to customer specifications or without a plug (open ends).
Protection class	IP 54 (EN 60529).

I.D. [mm]	wall thickness [mm]	working pressure [bar]	bending radius [mm]	thread size DIN 11851	output up to +40°C [W/m]	output up to +80°C [W/m]
20	6	10	150	Rd 44x1/6"	30	50
25	6	10	175	Rd 52x1/6"	40	60
32	6	10	224	Rd 58x1/6"	50	75
40	7	10	280	Rd 65x1/6"	60	90
50	7	10	350	Rd 78x1/6"	75	120
65	7	10	455	Rd 95x1/6"	90	150
80	8	10	560	Rd 110x1/4"	110	200
100	8	10	700	Rd 130x1/4"	140	250



## INDUSTRIAL HOSES - heated

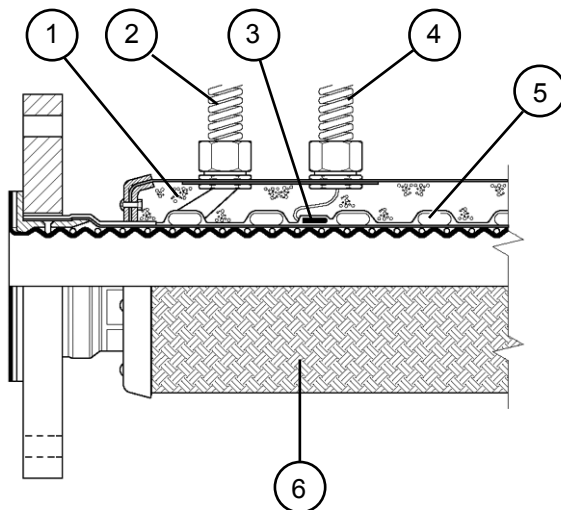
### Electrically trace heated hoses



#### **CORROFLON ETH BIOFLEX ETH**

Electrically heated hoses are manufactured using CORROFLON or BIOFLEX as base hoses. Designed for applications where the temperature of the fluid entering the hose assembly must be maintained or the solidified medium requires melting.

Characteristics as of regular CORROFLON and BIOFLEX hoses, except that the minimum bending radius is tripled, compared to the corresponding hose which is not heated. Because of the layer of insulation, the outside diameter is larger and the weight per meter is increased. The maximum length is the same as for standard CORROFLON or BIOFLEX hoses.



- ① - foam insulation layer
- ② - flexible cover of heating wires
- ③ - temperature sensor
- ④ - flexible cover of temperature sensor wires
- ⑤ - heating element helically wound along hose
- ⑥ - external braid, or other protective cover

Electrical wire of particular resistance, helically wound along the hose serves as a heating element (self-regulating is also available). These hoses usually require a temperature sensor to be built in under the insulation. The power leads and temperature sensor leads (if applicable) emerge from the hose assembly at one end, through glands and conduits. The foam rubber is applied for thermal insulation (silicone foam rubber for temperatures above +80°C). The external cover can be a polypropylene braid or stainless steel wire braid with an additional cover made of rubber or corrugated, waterproof PVC cover if necessary.

Each ETH hose assembly is custom designed and built. Initial conditions and requirements of the project must be supplied by filling in 'ETH Enquiry - Information Card' supplied by TUBES INTERNATIONAL®. Usually, for Zone 1 hazardous areas, a self-regulating type of heating element is employed, with (or without) a temperature sensor and controller. Flameproof glands and conduits are also applied in this case. The thermal output of the heating element (W/m), the pitch of the helix on the hose and the thickness of the thermal insulation are all calculated in accordance with a special formula in order to obtain the temperature required for the process.

## INDUSTRIAL HOSES - heated

### Examples of other electrically heated equipment

Many other electrically heated products are available. For more information, please contact Sales Department of TUBES INTERNATIONAL®.



## INDUSTRIAL HOSES - heated

### Hoses heated with a heating agent



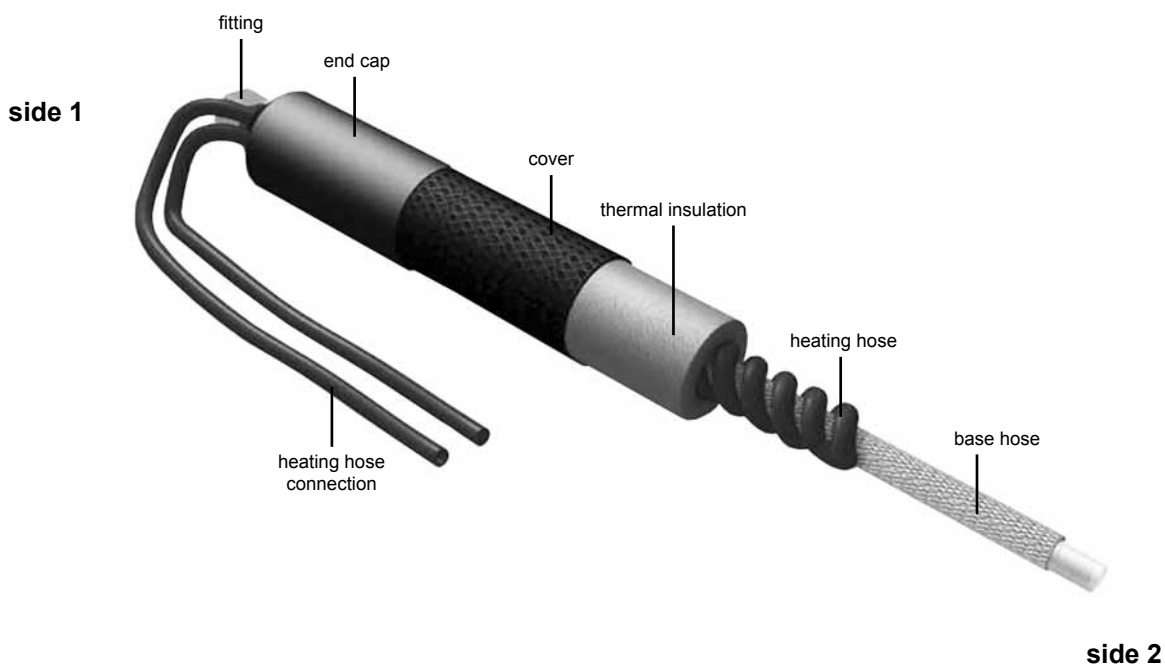
#### CH 60 / CH 62

The temperature in a hose is maintained by a heating agent that passes through a heating hose helically wound around a base hose: T1, T2, T3 (PTFE) or T5 (stainless steel). Water, steam or oil can be applied as a heating agent.

The hoses can handle cooling as well. Customers must decide on heating parameters (medium, temperature of the heating agent, installation).

Approved operation in potentially explosive zones.

CH 60 / CH 62 - basic information	
Max. working temperature	CH 60: +60°C. CH 62: +200°C.
Base hose	As for electrically heated HL T1 / T2 / T3 / T5 hose.
Base hose fittings	As for electrically heated HL T1 / T2 / T3 / T5 hose.
Heating hose	CH 60: PUR hose DN6 (maximum working pressure: 8 bar). CH 62: PTFE hose DN6 (maximum working pressure: 8 bar).
Heating hose connection	Both inlet and outlet of a heating hose may be led out at one side of the end cap, or an inlet at the end cap and outlet at the other side. Standard length of the heating hose extension beyond the end cap: 1 meter.
Heating hose fittings	1/4" BSP male or female as a standard. Other fittings available according to customer specifications.
Thermal insulation	Fleece or foam (made of elastomer or silicone).
Cover	As for electrically heated HL T1 / T2 / T3 / T5 hose.
End caps	As for electrically heated HL T1 / T2 / T3 / T5 hose.



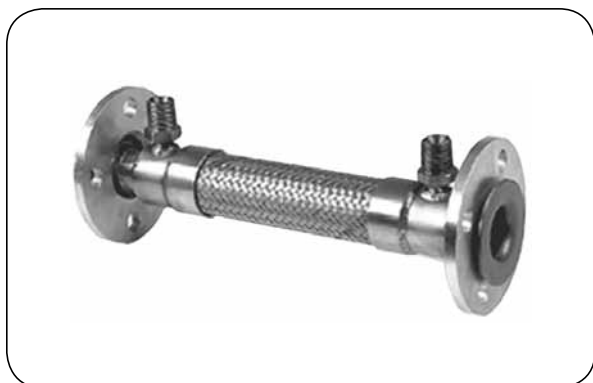
# INDUSTRIAL HOSES - heated

## Hoses heated with a heating agent



### CORROFLON CH BIOFLEX CH

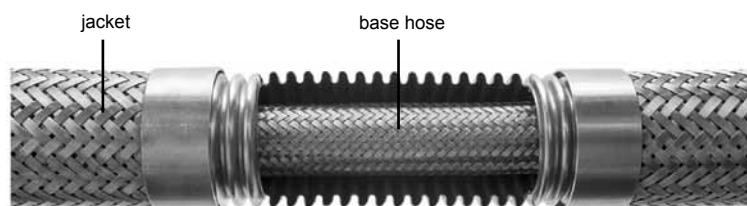
Steam heated hoses are manufactured using CORROFLON or BIOFLEX as base hoses. Designed for applications where the temperature of the fluid entering the hose assembly must be maintained or the solidified medium requires melting. The heating agent - steam passes through a helically wound, DN6 or DN10 PTFE hose. Characteristics - as of regular CORROFLON and BIOFLEX (1" ÷ 3") hoses, but the bending radius is tripled and the weight per meter is increased. Suitable for cooling. Customers must decide on heating parameters (medium, temperature of a heating agent, installation).



### CH 100

Hoses heated with an agent passing through an external jacket of a steel hose with a diameter respectively larger than a base hose. Water, steam or oil can be applied as a heating agent. Another application of the hoses may be cooling or protection (extra cover of a base hose). Customers must decide on heating parameters (medium, temperature of a heating agent, installation). Approved operation in potentially explosive atmospheres.

CH 100 - basic information	
Max. working temperature	Up to +600°C.
Base hose	Steel hoses: METALFLEX/M, METALICA/F, PARNOR, PARRAP, B-FLEX, C-FLEX, HP, THP. PTFE hose in stainless steel braid is also available.
Base hose fittings	According to customer specifications (metric and imperial male threads, fixed and swivel flanges according to DIN (EN 1092-1) and ANSI).
Heating hose (jacket)	Steel hoses: METALFLEX/M, METALICA/F, PARNOR, PARRAP, B-FLEX, C-FLEX, HP, THP.
Heating hose connection	According to customer specifications (metric and imperial male threads, fixed and swivel flanges according to DIN (EN 1092-1) and ANSI).
Heating hose fittings	According to customer specifications (metric and imperial male threads, fixed and swivel flanges according to DIN (EN 1092-1) and ANSI).



# INDUSTRIAL HOSES - floating hoses and elements

## Floating hoses



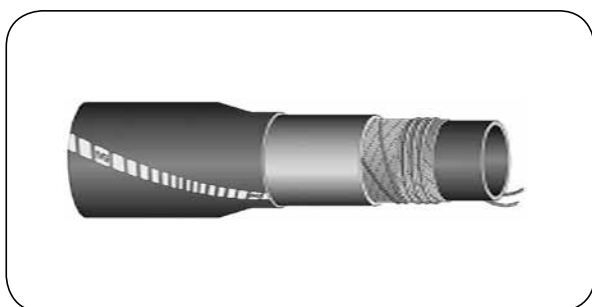
Floating hoses are widely used on all kinds of water basins. Their most common applications are as follows: reloading of oil in ports, transfer of crude oil from an oil rig to a ship, dredging, etc. There are several techniques that can be used to keep a hose afloat so as to protect it against damage by the ship's propeller and allow the vessel to be steered. Floating hoses are perfectly visible even in adverse weather conditions. They are made of foam which does not absorb water or sink in any operation conditions.

## Floating hoses with floaters



Floaters (floats) are placed at proper, regular intervals along the hose. High buoyancy prevents sinking and vivid colours ensure excellent visibility. The floating devices are fastened to the hose by clamps, wire prevents their sliding along the hose. There are several types of rubber hoses that can be used with floaters, e.g. FUEL HARDWALL, FUEL SOFTWALL, POTABLE.

## Floating hoses - integrated foam



### FUEL HARDWALL FLOAT®

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Black synthetic rubber  
**Working temp.:** From -20°C up to +90°C

Delivery hose designed to transfer drilling fluid and liquid petrochemical products with aromatic content up to 50%. The hose features copper wire to ensure electrical conductivity. External layer resistant to abrasion, oil, sea water and weather conditions. Intended to serve oil-rigs in particular. Other diameters are also available.

code	I.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-FUEL-HWFLOAT-051	51	20	80	1000	8	120
IV-FUEL-HWFLOAT-076	76	20	80	1500	10	120
IV-FUEL-HWFLOAT-102	102	20	80	2000	16	60
IV-FUEL-HWFLOAT-127	127	20	80	2300	25	60

## Floating hoses

### CARCASS floating hoses

**SINGLE CARCASS** - the primary hose solution intended for offshore media transfer. Further, as a result of continuous and laborious work to improve the properties of these hoses, their strength and flexibility was significantly enhanced. However recently they are replaced by **DOUBLE CARCASS** hoses - a hose surrounded by a hose (a hose within a hose). When used under water, they link pipelines with CALM buoys. When used as **CATENARY LOADING HOSES**, the medium is transferred vertically, usually on ships and oil rigs. They are highly resistant to elongation and twisting. Suitable for hose reels.

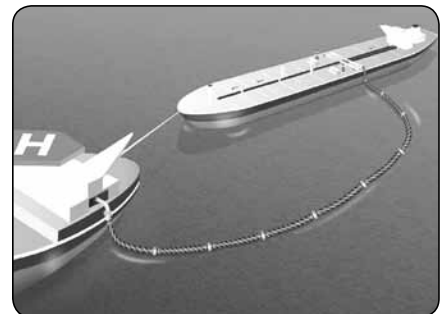
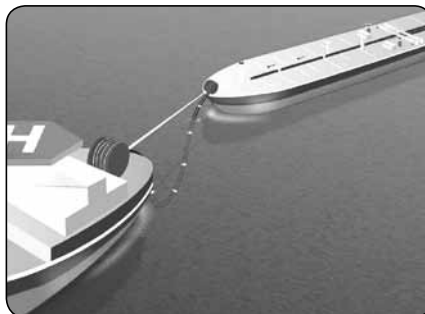
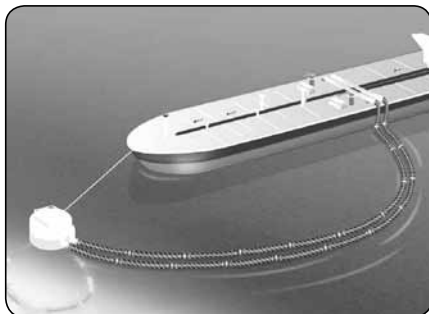


**DOUBLE CARCASS** - hoses of a carcass type were introduced to protect environment and for safety reasons in case of medium leakage. If the hose breaks, the medium leaks to the space between two hose layers. The resilience of both carcasses is similar. If the internal carcass breaks, the space between layers fills with the medium. Depending on the density of the medium, the damaged part of the hose goes slightly below or over the surface of water indicating the leakage. There are other warning systems as well.

### Examples of DOUBLE CARCASS floating hose application

Depending on the place of application within an oil transfer line, there are several types of double carcass hoses:

- highly flexible hose assembly designed to connect a CALM buoy to a ship,
- floating hose with consistent parameters along the whole length,
- robust and flexible hose in its tail part (a tanker is constantly moving during reloading),
- very flexible hose that goes over the ship's board and connects to a tanker.



## INDUSTRIAL HOSES - floating hoses and elements



### FLOWSAFE

**Material:** Bacell® - special foam, made from EVA plastic  
**Net buoyancy:** 16 kg  
**Weight:** 2 kg  
**Volume:** 18 dm<sup>3</sup>

FLOWSAFE floating devices designed to fit all hoses for offshore applications especially supply hoses used between ships and rigs. With floats on supply hoses, the transfer between ships and rigs becomes much safer. The hose stays afloat so it is clearly visible, which prevents its damage by the ship's propeller and avoids the problem of the ship becoming unable to manoeuvre. The floats protect the hose against wear and tear and therefore they are excellent fenders for both delivery hoses (without steel wire) and suction-delivery hoses (with steel wire) of 3", 4" and 5" in diameter. There are plastic bands placed in the grooves of the floats so they can be easily fastened. When the floating devices are applied for the delivery hoses a special wire strap should be used. The strap prevents the float from being displaced when the hose is being handled and without pressure. The floats are flexible, do not sink or absorb any water (the cells of foam are closed in 100%). They do not shrink or deform. UV radiation resistant.

picture	code	hose I.D. [inch]	dimensions					
			A	B	C	D	E	H
	TZ-90620-48	3	68	94	230	80	490	600
	TZ-90620-64	4	55	120	230	90	182	600
	TZ-90620-80	5	53	143	250	90	182	600

description	code	float size [inch]	wire diameter [mm]	wire length [mm]
Stainless steel, plastic coated braid clamping for delivery hoses	TZ-90622-01	3 and 4	3	480
	TZ-90622-02	5	3	640



### MINIFLOAT

**Material:** Bacell® - special foam, made from EVA plastic  
**Net buoyancy:** 1.5 kg (3"), 3 kg (4", 5")  
**Weight:** 0.42 kg

MINIFLOAT floating devices designed for 3", 4" and 5" diameter hoses (both delivery and suction-delivery hoses). They are threaded on a hose and set close together so as to obtain required buoyancy. The floats are flexible, do not sink or absorb any water (the cells of foam are closed in 100%). They do not shrink or deform. UV radiation resistant. A unique version of floats that reflects both light according to SOLAS requirements and UV radiation (so called dark light) - visible in hard weather conditions, available on special request.

picture	code	hose I.D. [inch]	dimensions		
			A	B	C
	TZ-90621-48	3	98	152	190
	TZ-90621-64	4	124	194	238
	TZ-90621-80	5	146	216	235



## INDUSTRIAL HOSES - technical gas



### ACETYLEN EN 559 / ISO 3821

**Internal layer:** Black SBR/NR compound  
**Reinforcement:** Two textile braids  
**External layer:** Red, ribbed SBR/NR compound  
**Working temp.:** From -30°C up to +70°C

Flexible welding hose for acetylene. Resistant to weather conditions and kinking. Manufactured according to ISO 3821 standard. Not suitable for fuel-based and oil-based gases or LPG.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
PR-ACETYLEN-559-05	5	11	20	50	0.13	50
PR-ACETYLEN-559-06	6.3	13.3	20	63	0.15	50
PR-ACETYLEN-559-08	8	16	20	80	0.18	50
PR-ACETYLEN-559-09	9	16	20	90	0.19	50
PR-ACETYLEN-559-10	10	18	20	100	0.21	50
PR-ACETYLEN-559-13	13	23	20	130	0.42	50
PR-ACETYLEN-559-16	16	26	20	160	0.51	50
PR-ACETYLEN-559-19	19	31	20	190	0.68	50
PR-ACETYLEN-559-25	25	36	20	250	0.82	50



### TWIN

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Polyester braid  
**External layer:** Synthetic rubber  
- red (for acetylene)  
- blue (for oxygen)

Twin welding hose according ISO 3821 standards.

code	I.D. [mm]	wall thickness [mm]	colour	working pressure [bar]	bursting pressure [bar]	standard length [m]
BG-TWIN-05-05	5 5	2.75 2.75	blue red	20	60	50
BG-TWIN-06-06	6 6	3.5 3.5	blue red	20	60	50
BG-TWIN-08-08	8 8	3.5 3.5	blue red	20	60	50
BG-TWIN-06-09	6 9	5 3.5	blue red	20	60	50
BG-TWIN-09-09	9 9	3.5 3.5	blue red	20	60	50

## INDUSTRIAL HOSES - technical gas



### OXYGEN EN 559 / ISO 3821

**Internal layer:** Black SBR/NR rubber  
**Reinforcement:** Two textile braids  
**External layer:** Blue, ribbed SBR/NR rubber  
**Working temp.:** From -30°C up to +70°C

Flexible welding hose for oxygen. Resistant to weather conditions and kinking. Manufactured according to ISO 3821 standard. Not suitable for fuel-based and oil-based gases or LPG.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
PR-OXYGEN-559-05	5	11	20	50	0.13	50
PR-OXYGEN-559-06	6.3	13.3	20	63	0.15	50
PR-OXYGEN-559-08	8	16	20	80	0.18	50
PR-OXYGEN-559-09	9	16	20	90	0.19	50
PR-OXYGEN-559-10	10	18	20	100	0.21	50
PR-OXYGEN-559-13	13	23	20	130	0.42	50
PR-OXYGEN-559-16	16	26	20	160	0.51	50
PR-OXYGEN-559-19	19	31	20	190	0.68	50
PR-OXYGEN-559-25	25	36	20	250	0.87	50



### OXYGEN / FV

**Internal layer:** Black CR rubber  
**Reinforcement:** Textile braid, fibreglass reinforcement  
**External layer:** Yellow or blue CR rubber  
**Working temp.:** From -20°C up to +70°C

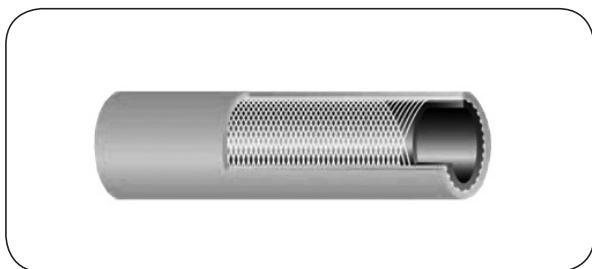
Hose designed for oxygen blowing lances used in metallurgical industry.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	standard length [m]
IV-OXYGEN-FV-13	13	27	25	75	120
IV-OXYGEN-FV-16	16	30	25	75	120
IV-OXYGEN-FV-19	19	33	25	75	120
IV-OXYGEN-FV-25	25	41	25	75	120
IV-OXYGEN-FV-32	32	50	25	75	120
IV-OXYGEN-FV-38	38	57	25	75	120
IV-OXYGEN-FV-51	51	70	25	75	120

Code example:

- hose with yellow external layer: IV-OXYGEN-FV-13Y
- hose with blue external layer: IV-OXYGEN-FV-13BL

## INDUSTRIAL HOSES - technical gas



### GWPB

**Internal layer:** Black NBR rubber  
**Reinforcement:** Two textile braids  
**External layer:** Orange EPDM/SBR rubber  
**Working temp.:** From -30°C up to +70°C

Flexible hose for liquefied petroleum gas (LPG) and natural gas. Fulfills ISO 3821 standards.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
SP-GWPB-04	4	11	20	60	30	0.12	50
SP-GWPB-05	5	12	20	60	40	0.14	50
SP-GWPB-06	6.3	13.3	20	60	50	0.16	50
SP-GWPB-08	8	15	20	60	60	0.18	50
SP-GWPB-09	9	16	20	60	70	0.19	50
SP-GWPB-10	10	17	20	60	75	0.20	50
SP-GWPB-12	12.5	19.5	20	60	95	0.25	50
SP-GWPB-16	16	23.4	20	60	120	0.31	50
SP-GWPB-19	19	29.6	20	60	140	0.55	40
SP-GWPB-20	20	30.6	20	60	150	0.58	40
SP-GWPB-25	25	35.6	20	60	190	0.69	40
SP-GWPB-32	31.5	44.1	20	60	240	1.12	40
SP-GWPB-35	35	48.2	20	60	260	1.28	20
SP-GWPB-38	38	51.4	20	60	280	1.40	20
SP-GWPB-40	40	53.4	20	60	300	1.46	20
SP-GWPB-45	45	58.6	20	60	340	1.64	20
SP-GWPB-50	50	63.6	20	60	375	1.80	20



### GPL CORD EN 1762:2003®

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Synthetic braid  
**External layer:** Black, pin pricked synthetic rubber  
**Working temp.:** From -30°C up to +100°C

Flexible delivery hose designed to transfer liquefied petroleum gas - LPG (liquid and gas state) and natural gas. External layer resistant to ozone and weather conditions. Antistatic ( $R < 10^6 \Omega/m$ ). The hose features copper wires to ensure electrical conductivity. Manufactured according to EN 1762:2003/D standard.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-GPL-CORD-M-013	13	24	25	100	100	0.39	60
IV-GPL-CORD-M-016	16	29	25	100	125	0.48	60
IV-GPL-CORD-M-019	19	32	25	100	160	0.55	60
IV-GPL-CORD-M-025	25	38	25	100	200	0.77	60
IV-GPL-CORD-M-032	32	46	25	100	250	1.04	60
IV-GPL-CORD-M-038	38	54	25	100	320	1.32	60
IV-GPL-CORD-M-045	45	62	25	100	400	1.61	60
IV-GPL-CORD-M-050	50	67	25	100	400	1.76	60
IV-GPL-CORD-M-065	65	83	25	100	550	2.44	60
IV-GPL-CORD-M-075	75	93	25	100	650	2.76	60
IV-GPL-CORD-M-100	102	124	25	100	800	-	60

## Hoses for high pressure gases

High pressure gases are transferred under pressure above 140 bar and therefore demand special types of flexible hoses. The most common applications of such usage are: filling up and emptying of gas tanks and cylinders, industrial installations, medical and laboratory installations. Typical gases used are: oxygen, nitrogen, hydrogen, helium, argon, carbon dioxide, acetylene and many other gases, including mixtures.

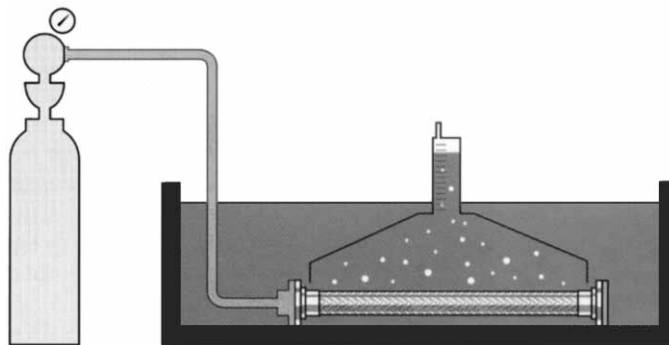
Hoses used for high pressure gas transfer:

- rubber hydraulic hoses,
- thermoplastic hoses,
- PTFE hoses,
- steel hoses,
- UHP SPIR STAR® hoses.

Before choosing a hose for high pressure gas transfer application, we need to consider the following issues:

### Permeation through the hose wall

High pressure gases exhibit a tendency to permeate - to pass through the hose walls. A phenomenon of gas permeation is highly complex and depends on such factors as: medium and its molecular structure, velocity and a type of flow (laminar or turbulent), temperature, thickness of a hose wall, its material and structure; particularly the degree of porosity of a hose material. In order to measure the precise rate of permeation, test procedures must be carried out under the actual or simulated working conditions.



The rate of permeation is higher when the particles of gases are small (helium, hydrogen) and when the hose wall is thin and with porosity. For those reasons:

- an external layer of rubber or thermoplastic hoses used for gases should be pin pricked to avoid accumulation of gas under the external layer,
- special PTFE hoses should be used for high pressure gases (HPG). Their permeability is lower because PTFE is processed in a special way,
- when dangerous gases are conveyed, consideration should be given to the issue of gas accumulation in a confined area around the hose,
- some gases or by-products of their reaction with e.g. moisture can damage the braid of the hose, its fittings or other parts of equipment.

### Working pressure

According to ISO7751 standard a safety factor (ratio of working pressure to burst pressure) for gases should be 4:1. Testing pressure should be twice as high as the working pressure.

### Working temperature

Gas expansion often causes a sudden temperature drop beyond regular working conditions. Take that process into account when choosing the material of the hose and fittings. It is generally recommended to use stainless steel fittings and brass nuts.

### Cleanliness and degreasing

If a hose is used for oxygen, its cleanliness and degreasing becomes crucial to avoid fire or explosion. Hose assemblies for oxygen must be degreased using special procedure.

## INDUSTRIAL HOSES - technical gas

### Electrostatic properties

Pure, single phase gases (gas without droplets of fluid or solid contaminants) usually do not require special, antistatic PTFE or thermoplastic material. Multiphase media (gas with fluid or solid contaminants) must not be transferred by PTFE or thermoplastic hoses because of a risk of electrostatic charges. Antistatic PTFE (with carbon additives) is not suitable for high pressure gases due to increased micro porosity of this material.

### Flow velocity and pressure pulsation

Appropriate construction of an installation should eliminate pressure pulsation. If a rise of pressure caused by pulsation occurs it must not exceed maximum working pressure. Flow velocity in corrugated steel hose assemblies should not exceed 30 m/sec - a turbulent flow can cause vibrations and damage the hose.

### Safety warning

High dynamics of a gas expansion process may contribute to a crack or tearing of a hose fitting. It causes potential risk of damage and harm to people, equipment and installation. To prevent such danger it is recommended to use e.g. steel wires fitted to the hose as a safety measure.

### Thermoplastic hoses for high pressure gases

The external layer of thermoplastic hoses must be pin-pricked (see chapter: HIGH PRESSURE, section - thermoplastic hoses). Confirm the medium being transferred to application. Use 4:1 safety factor.

### SPIR STAR hoses for high pressure gases

The external layer of SPIR STAR® hoses must be pin-pricked (see chapter: HIGH PRESSURE - UHP equipment, section - SPIR STAR® hoses). Confirm the medium being transferred to application. Use 6:1 safety factor.



## INDUSTRIAL HOSES - technical gas

### PTFE hoses for high pressure gases



#### HWDB / HPG

**Material:** Smooth PTFE  
**Reinforcement:** Double AISI 304 steel wire braid  
**Working temp.:** From -70°C up to +260°C

SMOOTHBORE PTFE hose version. A heavy wall made of the uniquely processed PTFE (reduced micro porosity) and a double steel wire braid of the hose make it suitable for high pressure gas applications.

Assembly: use fittings and ferrules from AF-TL series.

**For temperatures above +130°C reduce the maximum working pressure given in the tables by 0.75% for each 1°C of temperature rise above +130°C.**

**Example: at +170°C maximum working pressure for AF-HWDB-HPG-06 hose:**

$$225 \text{ bar} - (170^{\circ}\text{C} - 130^{\circ}\text{C}) \times 0.75 = 225 \text{ bar} - 30\% = 157.5 \text{ bar}.$$

code	DN	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
AF-HWDB-HPG-06	6	6 ÷ 6.5	10.6 ÷ 10.9	225	900	26	0.18
AF-HWDB-HPG-08	8	7.5 ÷ 8	12.1 ÷ 12.6	217	870	35	0.21
AF-HWDB-HPG-10	10	9.1 ÷ 9.6	13.9 ÷ 14.3	180	720	50	0.24



#### HWDB / HPG / HI

**Material:** Smooth PTFE  
**Reinforcement:** Aramid braid + 304 steel wire braid  
**External layer:** Micro perforated Hytrel  
**Working temp.:** From -50°C up to +70°C

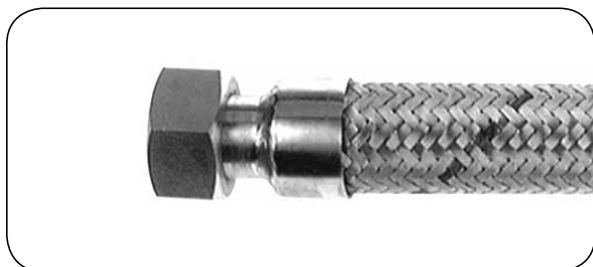
Special version of SMOOTHBORE PTFE hose designed for high pressure applications. A heavy wall made from the uniquely PTFE (reduced micro porosity), a double braid (aramid and steel braid) and an external Hytrel layer make it suitable for high pressure gas applications. The external Hytrel layer is available in several colour versions (black, red, green, blue) to distinguish hoses used for different types of gases.

Assembly: use fittings and ferrules from AF-TL series.

code	DN	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
AF-HWDB-HPG-HI-06	6	6 ÷ 6.3	12 ÷ 12.4	300	1200	30	0.19

# INDUSTRIAL HOSES - technical gas

## Steel hoses for high pressure gases

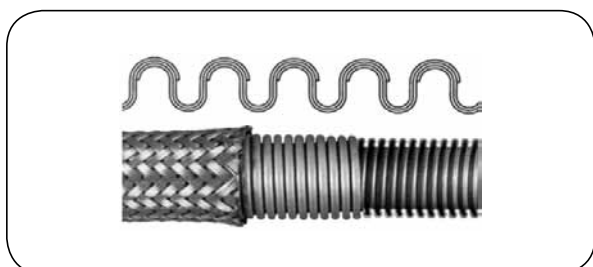


### HP / THP / THP 300

**Internal layer:** Corrugated AISI3 16L steel hose  
**Reinforcement:** Single (HP) or double (THP, THP300) AISI 304 steel braid  
**Working temp.:** From -270°C up to +800°C

Special, high pressure steel hose meets the requirements of EN ISO 10380 class 1 standard. This heavy wall hose is manufactured using hydroforming technology to achieve parallel, close pitch construction. Available with fittings for steel hoses on request. If used at high temperatures, working pressure given in the tables must be reduced by temperature correction factor according to EN ISO 10380 standard. THP300 version for gas transfer from a cylinder, qualified by CTE Air Liquide up to 250 bar. Safety factor 4:1.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	min. bending radius [mm]	
					static	dynamic
HP (single braid)						
TB-HP-006	6	11.4	180	720	25	110
TB-HP-010	10	17.8	145	580	38	150
TB-HP-012	12	20.2	140	560	45	165
THP (double braid)						
TB-THP-006	6	13	255	1020	25	110
TB-THP-010	10	19.4	195	780	38	150
TB-THP-012	12	21.8	185	740	45	165
THP 300 (double braid)						
TB-THP300-006	6.2	13.3	300	1200	25	140



### DUO UHP

**Internal layer:** Corrugated AISI 316L steel hose  
**Reinforcement:** Double AISI 304 steel braid  
**Working temp.:** From -196°C up to +600°C

Double-layer, helically corrugated hose intended for ultra high pressure application. A third layer on top of corrugations is special designed and applied using an electric resistance welding method in order to achieve top resistance to high pressure and vibration, yet to maintain excellent flexibility. Designed and made in accordance with EN ISO 10380 class 1 standard. Perfectly suitable for such applications as gas cylinder filling, connecting installation with gas cylinders or bottles, absorbing vibration and for any other applications in heavy duty operating conditions.

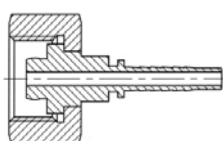
code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	min. bending radius [mm]	
					static	dynamic
TB-DUOUHP-05	5.2	12.6	395	1580	20	100
TB-DUOUHP-06	6.3	13.7	350	1400	25	140

# INDUSTRIAL HOSES - technical gas

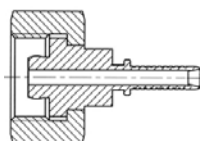
## Fittings for high pressure gas hoses

High pressure gas hoses can be used with many types of fittings in different shapes. Most of those fittings are adjusted to be connected to the valves of gas cylinders. The types of couplings of gas cylinder valves are listed in PN-81/M-69229 and DIN477-1. The standards specify the types of couplings (sizes, threads) and indicate the application with the particular type of gas. The size and shape of a tail end fitting depends on the size and type of the hose (rubber hydraulic, thermoplastic, PTFE, steel, SPIR STAR®). Material of the fittings must be resistant to the corrosive effect of gases, while some other materials must not be used (e.g. copper and copper alloys for acetylene and ammonia). Usually a fitting made of AISI 304 stainless steel with a brass nut are applicable.

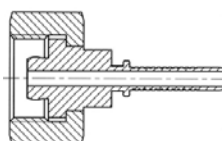
Other types of couplings according to the customer's specification or standards are also available e.g. elbows, but also those made of other materials e.g. zinc-plated carbon steel, AISI 316 stainless steel.



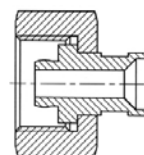
TI-ZBW170  
TI-ZWW170



AF-HBW170  
AF-HWW170



AF-TLBW170  
AF-TLWW170



TB-SBW170  
TB-SWW170

hose type	code			
	DN6 (1/4")	DN8 (5/16")	DN10 (3/8")	DN12 (1/2")
G-3/4" (3/4"-BSP) female thread, connection according to PN-81/M69229 (DIN477-1 No. 9) Material: fitting - AISI 304 steel, nut - brass, application: oxygen, carbogen.				
thermoplastic, hydraulic	TI-ZBW170-12-04-SS-MO	TI-ZBW170-12-05-SS-MO	TI-ZBW170-12-06-SS-MO	TI-ZBW170-12-08-SS-MO
PTFE HPG HI	-	-	-	-
PTFE HPG	AF-TLBW170-12-04-SS-MO	AF-TLBW170-12-05-SS-MO	AF-TLBW170-12-06-SS-MO	-
steel	TB-SBW170-12-04-SS-MO	-	TB-SBW170-16-06-SS-MO	TB-SBW170-12-08-SS-MO
Whitworth W21.8x1/14" female thread, connection according to PN-81/M-69229 (DIN477-1 No. 6) Material: fitting - AISI 304 steel, nut - brass, application: ammonia, argon, carbon dioxide, helium and many other.				
thermoplastic, hydraulic	TI-ZWW170-21-04-SS-MO	TI-ZWW170-21-05-SS-MO	TI-ZWW170-21-06-SS-MO	TI-ZWW170-21-08SS-MO TI-ZWW270-21-08-SS-MO
PTFE HPG HI	AF-HWW170-21-04-SS-MO	-	-	-
PTFE HPG	AF-TLWW170-21-04-SS-MO	AF-TLWW170-21-05-SS-MO	AF-TLWW170-21-06-SS-MO	-
steel	TB-SWW170-21-04-SS-MO	-	-	-
Whitworth W21.8x1/14"L (left) female thread, connection according to PN-81/M-69229 (DIN477-1 No. 1) Material: fitting - AISI 304 steel, nut - brass, application - hydrogen, methane, other flammable gases.				
thermoplastic, hydraulic	TI-ZWW170-21L-04-SS-MO	TI-ZWW170-21L-05-SS-MO	TI-ZWW170-21L-06-SS-MO	-
PTFE HPG HI	AF-HWW170-21L-04-SS-MO AF-HWW270-21L-04-SS-MO	-	-	-
PTFE HPG	AF-TLWW170-21L-04-SS-MO	AF-TLWW170-21L-05-SS-MO	AF-TLWW170-21L-06-SS-MO	-
steel	TB-SWW170-21L-04-SS-MO	-	TB-SWW170-21L-06-SS-MO	-
Whitworth W24.32x1/14" female thread, connection according to PN-81/M-69229 (DIN477-1 No. 10) Material: fitting - AISI 304 steel, nut - brass, application - nitrogen.				
thermoplastic, hydraulic	TI-ZWW170-24-04-SS-MO	-	TI-ZWW170-24-06-SS-MO	TI-ZWW170-24-08-SS-MO
PTFE HPG HI	AF-HWW270-24-04-SS-MO	-	TI-HWW270-24-06-SS-MO	-
PTFE HPG	AF-TLWW170-24-04-SS-MO AF-TLWW270-24-04-SS-MO	AF-TLWW170-24-05-SS-MO AF-TLWW370-24-05-SS-MO	AF-TLWW170-24-06-SS-MO	-
steel	TB-SWW-170-24-04-SS-MO	-	-	-



# INDUSTRIAL HOSES - air-conditioning

## General information about refrigerants

Refrigerant is a substance engaged in a process of heat exchange in refrigeration systems. The refrigerant absorbs heat by evaporation at low temperature and low pressure, then it gives up heat when vapour is condensed at the respectively higher temperature and pressure. A refrigerant can be made of a single substance or a combination of two or more substances.

There are numerous substances that can be employed as refrigerants: natural substances (ammonia, water, carbon dioxide), flammable gases and their mixtures (propane, butane) and synthetic media - hydrocarbons, where atoms of hydrogen were substituted by chlorine, fluoride or bromine obtaining non-flammable, low-boiling substances commonly known as "Freons". Refrigerants are usually defined with a number preceded by a letter R: R12, R22, R134a. Due to environmental concerns (ozone depletion) the application of some refrigerants is limited and prohibited of the others - in new or refilled equipment (e.g. R12, R22, R502).

- R12** - formerly the most popular refrigerant, used in household refrigerators, replaced with R134a.  
**R22, R502** - used in large refrigerating equipment, now being replaced with recently designed blends such as R402a, R404a, R407, R507.  
**R134a** - the most common refrigerant at the moment, especially in car air-conditioning.

A refrigerant is usually called with the brand name of its manufacturer e.g.: Suva HP62, Suva MP52, Forane134a, Reclin 404a etc.

Apart from refrigerants, there are lubricants also used in installations. The impact of lubricants on the material of hoses and sealing have to be taken into account. Common lubricants: mineral oils, ester oil, polyalkylene glycol (PAG).



## FR 5

- Internal layer:** Polyamide (PA) + thermoplastic elastomer (TPE) (from 1/12" to 1/4")  
Polyamide (from 5/16" to 1")  
**Reinforcement:** Polyester braid  
**External layer:** Pin-pricked polyurethane, resistant to abrasion  
**Working temp.:** From -45°C up to +130°C

Lightweight, flexible hose designed for commercial refrigeration systems (alternative to copper pipes) and automotive air-conditioning (filling and testing). Particularly recommended for Freons (R22, R134a, R404a, R407c, R410a, R507), POE and PAG compressor oils. The hose in sizes from 1/12" to 1/4" can be also used to transfer CO<sub>2</sub> (R-744) - when CO<sub>2</sub> is used as a refrigerant, pressure must be up to 10 times higher than when regular Freons are used. Assembly: use ZC-FR type fittings.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-FR5-02	2.1	6	120	600	15	2.80
ZC-FR5-04	4	8.2	120	600	30	4.30

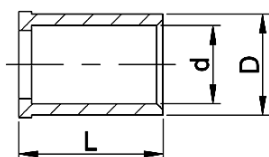
Assembly: use Z type fittings (IT-46).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-FR5-05	4.8	10.1	120	600	50	6.90
ZC-FR5-06	6.4	11.9	120	600	75	8.60
ZC-FR5-08	8.1	14.2	60	300	89	12.00
ZC-FR5-10	9.7	15.6	60	300	100	13.40
ZC-FR5-13	12.9	19.3	60	300	125	18.00
ZC-FR5-16	16	22.3	45	225	165	20.90
ZC-FR5-19	19.2	25.3	45	225	250	25.70
ZC-FR5-25	25.4	32.3	45	225	300	34.40

# INDUSTRIAL HOSES - air-conditioning

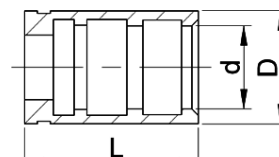
## Fittings for ZC-FR5-02 (1/12") and ZC-FR5-04 (5/32") hoses

Ferrule for 1/12" hose (aluminium)



code	L [mm]	d [mm]	D [mm]
ZC-FR-015	11.5	6.2	8

Ferrule for 5/32" hose (aluminium)



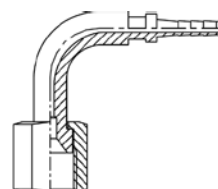
code	L [mm]	d [mm]	D [mm]
ZC-FR-025	18	8.6	11.2

UNF female thread, SAE type, 45° cone, (1/12 - brass, 5/32 - steel)



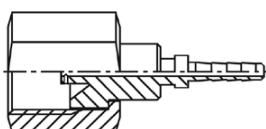
code	thread [inch]	hose I.D. [inch]
ZC-FR101-04-015	7/16-20 UNF (1/4 SAE)	1/12
ZC-FR101-04-025	7/16-20 UNF (1/4 SAE)	5/32
ZC-FR101-06-025	5/8-18 UNF (3/8 SAE)	5/32

UNF female thread, SAE type, 45° cone, (1/12 - brass, 5/32 - steel)



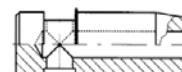
code	thread [inch]	hose I.D. [inch]
ZC-FR102-04-015	7/16-20 UNF (1/4 SAE)	1/12
ZC-FR102-04-025	7/16-20 UNF (1/4 SAE)	5/32
ZC-FR102-06-025	5/8-18 UNF (3/8 SAE)	5/32

UNF fem. thread, SAE type, 45° cone, with throttle (brass)



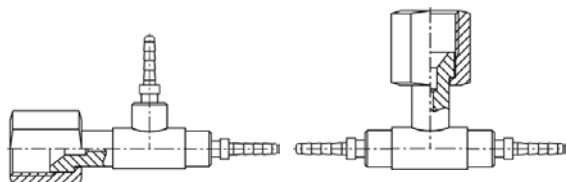
code	thread [inch]	hose I.D. [inch]
ZC-FR103-04-015	7/16-20 UNF (1/4 SAE)	1/12

Throttle for FR103 type fitting (brass)



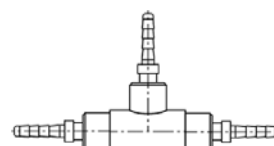
code	thread [inch]
ZC-FR103-D	7/16-20 UNF (1/4 SAE)

Tee-adapter, UNF female thread, SAE type, 45° cone, (brass)



code	thread [inch]	hose I.D. [inch]
ZC-FR105-015	7/16-20 UNF (1/4 SAE)	1/12
ZC-FR106-015	7/16-20 UNF (1/4 SAE)	1/12

Tee-connector (brass)



code	hose I.D. [inch]
ZC-FR104-015	1/12

## INDUSTRIAL HOSES - air-conditioning



### 3055

**Internal layer:** Synthetic rubber (CR), nylon layer (PA),  
**Reinforcement:** Double textile braid  
**External layer:** Pin-pricked synthetic rubber (EPDM)  
**Working temp.:** From -35°C up to +125°C

The top grade hose designed for automotive and commercial refrigeration systems, air-conditioning systems operating with the use of Freon R 12, R 134a, Suva MP 52, R 22, and such lubricants as mineral oils, esters, PAG. External layer resistant to oil, abrasion and weather conditions.

Standards: 3055 - SAE J51b AII/SAE J2064, FORD: WHSM 96D25, CHRYSLER:PF6318.

Assembly: use fittings for air-conditioning - BU (IT-43, IT-44, IT-73).

code	I.D. [inch]	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]
BU-3055-08	5/16	7.9	18.3	24	121	65
BU-3055-10	13/32	10.3	22.4	24	121	90
BU-3055-13	1/2	12.7	24.6	24	121	100
BU-3055-16	5/8	15.9	27.7	17	86	115



### 3356

**Internal layer:** Synthetic rubber IIR  
**Reinforcement:** Single steel braid  
**External layer:** Pin-pricked synthetic rubber (CSM)  
**Working temp.:** From -40°C up to +125°C

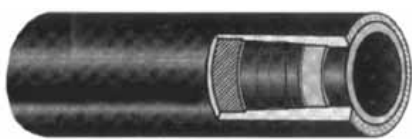
The top grade hose designed for automotive (especially trucks and buses) and commercial refrigeration systems, air-conditioning systems operating with the use of Freon R134a and such lubricants as mineral oils, esters, PAG. External layer resistant to oil, abrasion and weather conditions.

Standards: SAE J2064 type B (SAE 100R5 dimensions).

Assembly: use fittings for air-conditioning - BU.

code	I.D. [inch]	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]
BU-3356-22	7/8	22,6	31,2	35	137	155
BU-3356-28	1.1/8	28	38	35	137	190

## INDUSTRIAL HOSES - air-conditioning



### 3090

**Internal layer:** Synthetic rubber (CR) with a nylon (PA) interlayer  
**Reinforcement:** Single textile braid  
**External layer:** Pin-pricked synthetic rubber (CIIR)  
**Working temp.:** From -40°C up to +135°C

The top grade hose designed for automotive and commercial refrigeration systems, air-conditioning systems operating with the use of R134a (also R12, Suva MP52, R22, HFO1234yf) and such lubricants as mineral oils, esters, PAG. External layer resistant to abrasion and weather conditions.

Assembly: use fittings for air-conditioning BU-54... (BURGACLIP system, IT-73) or BU-53... (IT-43, IT-44).

code	I.D. [inch]	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]
BU-3090-08	5/16	7,9 ÷ 8,6	14,2 ÷ 15,2	35	172	51
BU-3090-10	13/32	10,3 ÷ 11,2	16,8 ÷ 17,8	35	172	64
BU-3090-13	1/2	12,7 ÷ 13,5	18,9 ÷ 19,9	35	121	76
BU-3090-16	5/8	15,9 ÷ 16,6	23,1 ÷ 24,1	35	121	102
BU-3090-19	3/4	18,8 ÷ 19,8	26,9 ÷ 27,9	24	100	250
BU-3090-22	7/8	21,5 ÷ 22,5	30 ÷ 32	25	125	200

### Air-conditioning fittings assembly

Thermoplastic hoses designed for air-conditioning applications (e.g. FR5) are usually used with standard hydraulic fittings (Z type) and matching crimp ferrules.

Rubber hoses designed for air-conditioning require specially designed fittings in aluminium or steel: reusable, crimp or for assembly with the use of special clips (fast assembly system).



#### Reusable fittings

Assembly of a fitting is performed by screwing the fitting together with a ferrule that was fitted on the hose. An advantage of this solution is a lack of need to use tools - useful in the field conditions.

#### Fast assembly system

Special design of a fitting tail and a clip enables fast and easy assembly using only assembly pliers.

#### Crimp fittings

A crimp fitting for air-conditioning has an integrated ferrule. The crimping process is performed by crimping pliers, crimping machines designed for air-conditioning or by standard FINN-POWER crimping machines (with special die sets).

#### Hose assembly repair

If a hose assembly failed but its fittings are not damaged, it can be easily repaired by brazing the fittings to nipples and assembling then once again on the new hose.

## INDUSTRIAL HOSES - air-conditioning

### BURGACLIP fast assembly system



The system enables fast and easy assembly of air-conditioning fittings with the use of special clamps that are tightened with assembly pliers. Special design of a tail combined with a top grade hose ensures excellent quality of the hose assembly - very low Freon permeability.

We provide a range of fittings for fast assembly system (designed for 3090 hose in particular).



BU-8766

### Assembly pliers

Special clip pliers designed to assemble clips of the air-conditioning fittings - BURGACLIP.



BU-CASE-1

### Tool case

The case includes a full set of tools necessary to assemble an air-conditioning hose and fittings of BURGACLIP system.

The case contains:

- special clip pliers designed to assemble clips of the air-conditioning fittings - BURGACLIP,
- hose cutter for hose of BU-3090 type in DN8, 10, 12, 16 dimension,
- dual range hose cutter for hoses with an outside diameter up to 42 mm.



BU-CASE-2

### Service case

The case contains a set of various (most often used) BURGACLIP fittings for BU-3090 hose type in DN8, 10, 12 and 16.

The case contains:

- 80 BURGACLIP clips,
- 40 BURGACLIP clip holders,
- 39 BURGACLIP fittings (straight, elbow, UNF thread, for compressors, type: SAE, ORFS),
- 80 HNBR O-rings.

# INDUSTRIAL HOSES - air-conditioning

## Fittings for air-conditioning rubber hoses - BURGACLIP

BURGACLIP - assembly elements



**8769**



**8768**

fitting connection size	hose I.D. [inch]	clip holder (plastic)	clip (stainless steel)
		code	code
-06	5/16	BU-8769-06	BU-8768-06
-08	13/32	BU-8769-08	BU-8768-08
-10	1/2	BU-8769-10	BU-8768-10
-12	5/8	BU-8769-12	BU-8768-12
-14	3/4	BU-8769-14	BU-8768-14

BURGACLIP - braze nipples



**54743**

fitting connection size	hose dash	connection size [inch]	hose I.D. [inch]	code
-06	-06	3/8	5/16	BU-54743-06-06-S
-06	-08	3/8	13/32	BU-54743-06-08-S
-08	-08	1/2	13/32	BU-54743-08-08-S
-08	-10	1/2	1/2	BU-54743-08-10-S
-10	-10	5/8	1/2	BU-54743-10-10-S
-10	-12	5/8	5/8	BU-54743-10-12-S
-12	-12	3/4	5/8	BU-54743-12-12-S
-12	-14	3/4	3/4	BU-54743-12-14-S
-12	-16	3/4	7/8	BU-54743-12-16-S
-16	-16	1	7/8	BU-54743-16-16-S

BURGACLIP - connectors



**548753**



**548751**



**548749**

hose dash	hose I.D. [inch]	valve size [mm]	connector	connector with R134 valve	90° connector
			code	code	code
-06	5/16	16	BU-548753-06-06-S	BU-548753-06-06-HP-S	BU-548749-06-06-S
-08	13/32	16	BU-548753-08-08-S	BU-548753-08-08-HP-S	BU-548749-08-08-S
-10	1/2	13	BU-548753-10-10-S	BU-548753-10-10-LP-S	BU-548749-10-10-S
-12	5/8	13	BU-548753-12-12-S	BU-548753-12-12-LP-S	BU-548749-12-12-S

# INDUSTRIAL HOSES - air-conditioning

## Fittings for air-conditioning rubber hoses - BURGACLIP

BURGACLIP - tube connection fitting with UNF female thread



**54704**



**54705**



**54706**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	straight	45°	90°
				code	code	code
-06	-06	5/8-18	5/16	BU-54704-06-06-S	BU-54705-06-06-S	BU-54706-06-06-S
-06	-08	5/8-18	13/32	BU-54704-06-08-S	-	BU-54706-06-08-S
-08	-06	3/4-16	5/16	BU-54704-08-06-S	BU-54705-08-06-S	-
-08	-08	3/4-16	13/32	BU-54704-08-08-S	BU-54705-08-08-S	BU-54706-08-08-S
-08	-10	3/4-16	1/2	BU-54704-08-10-S	BU-54705-08-10-S	BU-54706-08-10-S
-10	-08	7/8-14	13/32	BU-54704-10-08-S	-	BU-54706-10-08-S
-10	-10	7/8-14	1/2	BU-54704-10-10-S	BU-54705-10-10-S	BU-54706-10-10-S
-10	-12	7/8-14	5/8	BU-54704-10-12-S	BU-54705-10-12-S	BU-54706-10-12-S
-12	-10	1.1/16-14	1/2	BU-54704-12-10-S	-	BU-54706-12-10-S
-12	-12	1.1/16-14	5/8	BU-54704-12-12-S	BU-54705-12-12-S	BU-54706-12-12-S
-12	-14	1.1/16-14	3/4	BU-54704-12-14-S	BU-54705-12-14-S	BU-54706-12-14-S

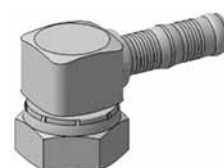
BURGACLIP - compressor fitting with UNF female thread



**54707**



**54708**



**54709**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	straight	45°	90°
				code	code	code
-10	-08	1-14	13/32	BU-54707-10-08-S	BU-54708-10-08-S	BU-54709-10-08-S
-10	-10	1-14	1/2	BU-54707-10-10-S	BU-54708-10-10-S	BU-54709-10-10-S
-10	-12	1-14	5/8	BU-54707-10-12-S	BU-54708-10-12-S	BU-54709-10-12-S

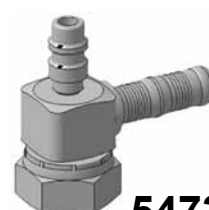
BURGACLIP - compressor fitting with UNF female thread and R134 valve



**54733**



**54734**



**54735**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	straight	45°	90°
					code	code	code
-10	-08	1-14	13/32	16	BU-54733-10-08-HP-S	BU-54734-10-08-HP-S	BU-54735-10-08-HP-S
-10	-10	1-14	1/2	13	BU-54733-10-10-LP-S	BU-54734-10-10-LP-S	BU-54735-10-10-LP-S
-10	-12	1-14	5/8	13	BU-54733-10-12-LP-S	BU-54734-10-12-LP-S	BU-54735-10-12-LP-S

## INDUSTRIAL HOSES - air-conditioning

### Fittings for air-conditioning rubber hoses - BURGACLIP

BURGACLIP - tees



**548750**



**548752**

hose dash 1	hose I.D. 1 [inch]	hose dash 2	hose I.D. 2 [inch]	hose dash 3	hose I.D. 3 [inch]	T-tee	Y-tee
						code	code
-06	5/16	-06	5/16	-06	5/16	BU-548750-06-06-06-S	BU-548752-06-06-06S
-08	13/32	-08	13/32	-08	13/32	BU-548750-08-08-08-S	BU-548752-08-08-08S
-10	1/2	-10	1/2	-10	1/2	BU-548750-10-10-10-S	BU-548752-10-10-10S
-12	5/8	-12	5/8	-12	5/8	BU-548750-12-12-12-S	BU-548752-12-12-12S

BURGACLIP - tube connection fitting with UNF female thread and R134 valve



**54717**



**54718**



**54719**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size [mm]	straight	45°	90°
					code	code	code
-06	-06	5/8-18	5/16	16	BU-54717-06-06-HP-S*	BU-54718-06-06-HP-S*	BU-54719-06-06-HP-S*
-08	-08	3/4-16	13/32	16	BU-54717-08-08-HP-S*	BU-54718-08-08-HP-S*	BU-54719-08-08-HP-S*
-08	-10	3/4-16	1/2	16	BU-54717-08-10-LP-S	-	-
-10	-10	7/8-14	1/2	13	BU-54717-10-10-HP-S*	BU-54718-10-10-HP-S*	BU-54719-10-10-HP-S*
-10	-10	7/8-14	1/2	13	BU-54717-10-10-LP-S	BU-54718-10-10-LP-S	BU-54719-10-10-LP-S
-10	-12	7/8-14	5/8	13	BU-54717-10-12-LP-S	BU-54718-10-12-LP-S	BU-54719-10-12-LP-S
-12	-12	1.1/16-14	5/8	13	BU-54717-12-12-LP-S*	BU-54718-12-12-LP-S*	BU-54719-12-12-LP-S*
-12	-14	1.1/16-14	3/4	13	BU-54717-12-14-LP-S	-	-

\* - available with R12 valve (BU-54710 - straight, BU-54711 - 45°, BU-54712 - 90°)



# INDUSTRIAL HOSES - air-conditioning

## Fittings for air-conditioning rubber hoses - BURGACLIP

BURGACLIP - tube connection fitting without nut



**54724**



**54725**



**54726**

fitting connection size	hose dash	tube [mm]	hose I.D. [inch]	straight	45°	90°
				code	code	code
-06	-06	8.5	5/16	BU-54724-06-06-S	BU-54725-06-06-S	BU-54726-06-06-S
-08	-06	11.6	5/16	BU-54724-08-06-S		
-08	-08	11.6	13/32	BU-54724-08-08-S	BU-54725-08-08-S	BU-54726-08-08-S
-10	-10	14.4	1/2	BU-54724-10-10-S	-	BU-54726-10-10-S
-10	-12	14.4	5/8	BU-54724-10-12-S	-	-
-12	-10	17.5	1/2	BU-54724-12-10-S	BU-54725-12-10-S	BU-54726-12-10-S
-12	-12	17.5	5/8	BU-54724-12-12-S	BU-54725-12-12-S	BU-54726-12-12-S

BURGACLIP - connection fitting with UNF female thread, SAE type, 45° cone



**54701**



**54702**



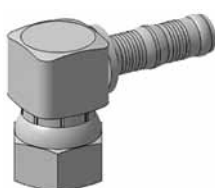
**54703**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	straight	45°	90°
				code	code	code
-04	-06	7/16-20	5/16	BU-54701-04-06-S	BU-54702-04-06-S	BU-54703-04-06-S
-06	-06	5/8-18	5/16	BU-54701-06-06-S	BU-54702-06-06-S	BU-54703-06-06-S
-06	-08	5/8-18	13/32	BU-54701-06-08-S	BU-54702-06-08-S	BU-54703-06-08-S
-08	-06	3/4-16	5/16	BU-54701-08-06-S	BU-54702-08-06-S	BU-54703-08-06-S
-08	-08	3/4-16	13/32	BU-54701-08-08-S	BU-54702-08-08-S	BU-54703-08-08-S
-08	-10	3/4-16	1/2	BU-54701-08-10-S	BU-54702-08-10-S	BU-54703-08-10-S
-10	-08	7/8-14	13/32	BU-54701-10-08-S	BU-54702-10-08-S	BU-54703-10-08-S
-10	-10	7/8-14	1/2	BU-54701-10-10-S	BU-54702-10-10-S	BU-54703-10-10-S
-10	-12	7/8-14	5/8	BU-54701-10-12-S	BU-54702-10-12-S	BU-54703-10-12-S
-12	-12	1.1/16-14	5/8	BU-54701-12-12-S	BU-54702-12-12-S	BU-54703-12-12-S

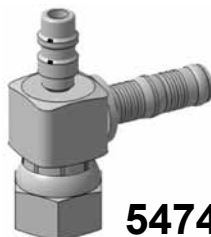
# INDUSTRIAL HOSES - air-conditioning

## Fittings for air-conditioning rubber hoses - BURGACLIP

BURGACLIP - tube connection fitting with UNF female thread



**54740 (54421)**



**54742**

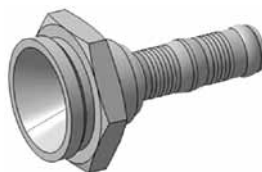


**54412 (54422)**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size [mm]	standard	with R134 valve	with R134 valve
					code	code	code
-06	-06	5/8-18	5/16	16	BU-54740-06-06-S*	BU-54742-06-06-HP-S	BU-54412-06-06-HP-S
-06	-06	5/8-18	5/16	16	BU-54421-06-06-S	-	BU-54422-06-06-HP-S
-08	-08	3/4-16	13/32	16	BU-54740-08-08-S*	BU-54742-08-08-HP-S	BU-54412-08-08-HP-S
-08	-08	3/4-16	13/32	16	BU-54421-08-08-S	-	BU-54422-08-08-HP-S
-10	-10	7/8-14	1/2	13	BU-54740-10-10-S	BU-54742-10-10-LP-S	BU-54412-10-10-LP-S
-10	-10	7/8-14	1/2	13	BU-54421-10-10-S*	-	BU-54422-10-10-LP-S
-12	-12	1.1/16-14	5/8	13	BU-54740-12-12-S	BU-54742-12-12-LP-S	BU-54412-12-12-LP-S

\* - „short drop“ version - with short part with a nut

BURGACLIP - quick release coupling connection



**54747**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	code
-08	-06	7/8-20	5/16	BU-54747-08-06S
-08	-08	7/8-20	13/32	BU-54747-08-08S
-12	-10	1.1/4-18	1/2	BU-54747-12-10S

BURGACLIP - connection fitting with a female metric thread, type DIN 3865, 24° cone, light series



**54901**



**54910**




**54904**

fitting connection size	hose dash	thread [mm]	hose I.D. [inch]	straight	45°	90°
				code	code	code
-22	-14	M30x2	3/4	BU-54901-22-14-S	BU-54910-22-14-S	BU-54904-22-14-S
-22	-16	M30x2	7/8	BU-54901-22-16-S	BU-54910-22-16-S	BU-54904-22-16-S


# INDUSTRIAL HOSES - air-conditioning

## Fittings for air-conditioning rubber hoses - BURGACLIP


BURGACLIP - tube connection fitting with UNF male thread

						
fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	straight	45°	90°
				code	code	code
-06	-06	5/8-18	5/16	BU-54213-06-06-S	BU-54215-06-06-S	BU-54214-06-06-S
-08	-08	3/4-18	13/32	BU-54213-08-08-S	BU-54215-08-08-S	BU-54214-08-08-S
-10	-10	7/8-18	1/2	BU-54213-10-10-S	BU-54215-10-10-S	BU-54214-10-10-S
-10	-12	7/8-18	5/8	BU-54213-10-12-S	BU-54215-10-12-S	BU-54214-10-12-S
-12	-12	1.1/16-16	5/8	BU-54213-12-12-S	BU-54215-12-12-S	BU-54214-12-12-S

BURGACLIP - tube connection fitting with UNF male thread with a R134 valve

							
fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	straight	45°	90°
					code	code	code
-06	-06	5/8-18	5/16	16	-	-	BU-54217-06-06-HP-S
-08	-08	3/4-18	13/32	16	-	-	BU-54217-08-08-HP-S
-10	-10	7/8-18	1/2	13	-	-	BU-54217-10-10-LP-S
-12	-12	1.1/16-16	5/8	13	-	-	BU-54217-12-12-LP-S

BURGACLIP - tube connection fitting with UNF male thread, male insert

						
fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	straight	45°	90°
				code	code	code
-06	-06	5/8-18	5/16	BU-54206-06-06-S	BU-54207-06-06-S	BU-54208-06-06-S
-06	-08	5/8-18	13/32	BU-54206-06-08-S	-	-
-08	-08	3/4-16	13/32	BU-54206-08-08-S	BU-54207-08-08-S	BU-54208-08-08-S
-08	-10	3/4-16	1/2	BU-54206-08-10-S	-	-
-10	-08	7/8-14	13/32	BU-54206-10-08-S	-	-
-10	-10	7/8-14	1/2	BU-54206-10-10-S	BU-54207-10-10-S	BU-54208-10-10-S
-10	-12	7/8-14	5/8	BU-54206-10-12-S	BU-54207-10-12-S	BU-54208-10-12-S
-12	-12	1.1/16-14	5/8	BU-54206-12-12-S	BU-54207-12-12-S	BU-54208-12-12-S

## INDUSTRIAL HOSES - air-conditioning

### Fittings for air-conditioning rubber hoses - BURGACLIP

BURGACLIP - bulk head tube connection fitting with UNF male thread, male insert



**54758**



**54760**



**54759**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	straight	45°	90°
				code	code	code
-06	-06	5/8-18	5/16	BU-54758-06-06-S	BU-54760-06-06-S	BU-54759-06-06-S
-08	-08	3/4-16	13/32	BU-54758-08-08-S	BU-54760-08-08-S	BU-54759-08-08-S
-10	-10	7/8-14	1/2	BU-54758-10-10-S	BU-54760-10-10-S	BU-54759-10-10-S
-12	-12	1.1/16-14	5/8	BU-54758-12-12-S	BU-54760-12-12-S	BU-54759-12-12-S

BURGACLIP - connection fitting with UNF female thread, ORFS type, flat seal



**54501**



**54502**



**54503**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	straight	45°	90°
				code	code	code
-04	-06	9/16-18	5/16	BU-54501-04-06-S	BU-54502-04-06-S	BU-54503-04-06-S
-06	-06	11/16-16	5/16	BU-54501-06-06-S	BU-54502-06-06-S	BU-54503-06-06-S
-08	-08	13/16-16	13/32	BU-54501-08-08-S	BU-54502-08-08-S	BU-54503-08-08-S
-10	-10	1-14	1/2	BU-54501-10-10-S	BU-54502-10-10-S	BU-54503-10-10-S
-12	-12	1.3/16-12	5/8	BU-54501-12-12-S	BU-54502-12-12-S	BU-54503-12-12-S

BURGACLIP - connection fitting with BOCK flange (41.8 mm)



**54754**



**54755**



**54757**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	straight	45°	90°
				code	code	code
-16	-14	41.8	3/4	BU-54754-16-14-S	BU-54755-16-14-S	BU-54757-16-14-S
-16	-16	41.8	7/8	BU-54754-16-16-S	BU-54755-16-16-S	BU-54757-16-16-S

## INDUSTRIAL HOSES - air-conditioning

### Hand crimper for air-conditioning hoses



Crimping machines designed to assemble fittings on standard rubber hoses for air-conditioning systems in diameters: 5/16" (8 mm), 13/32" (10.3 mm), 1/2" (12.7 mm), 5/8" (16 mm). Using appropriate die sets, one can assemble fittings on standard hoses and hoses with reduced outside diameter. Heads of the crimping machines allow the hose to be pulled through them. This assembly solution makes crimping of the angular fittings particularly easy. TNT 250 - six dies crimp. Depending on a version crimping is performed manually with the help of a special key, by hydraulic pump that is manually or pneumatically operated. TNT 8 - eight dies crimp. Depending on a version crimping is performed by a simple electric drill, by hydraulic pump that is manually or pneumatically operated.

code	description
PF-TNT250-B	Hand crimper, 6 die sets for standard and reduced O.D. hoses, lubricant, plastic calliper, tool case.
PF-TNT250-P	Hand crimper with manually operated hydraulic pump, 6 die sets for standard and reduced O.D. hoses, lubricant, plastic calliper, tool case.
PF-APT100	Pneumatically operated hydraulic pump (700 bar) - TNT 250.
PF-MPT100	Manually operated hydraulic pump.
PF-UHT100	Hydraulic actuator 5.6 T with 1.8 m hose (700 bar).
PF-HCT100	Hydraulic actuator 5.6 T.
PF-HET100	1.8 m hose (700 bar).
PF-TNT8-MPT100MOSI	Hand crimper with hydraulic pump operated by an electrical drill, 6 die sets for standard and reduced O.D. hoses, tool case.
PF-TNT8-MPT10032SE	Hand crimper with manually operated hydraulic pump, 6 die sets for standard and reduced O.D. hoses, tool case.
PF-TNT8-UHTM	Hand crimper with hydraulic actuator with 1.8 m hose, 6 die sets for standard and reduced O.D. hoses, tool case.
PF-APT100-TNT8	Pneumatically operated hydraulic pump (300 bar) - TNT 8.



PF-TNT250-P



PF-APT100



PF-TNT8-MPT100MOSI

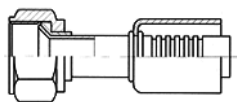


PF-TNT8-MPT10032SE

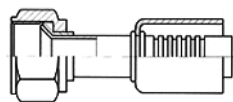
# INDUSTRIAL HOSES - air-conditioning

## Fittings for air-conditioning rubber hoses

SAE 45° female swivel, UNF thread



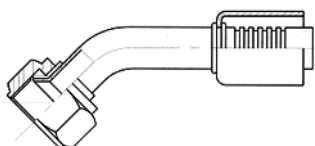
**52701**



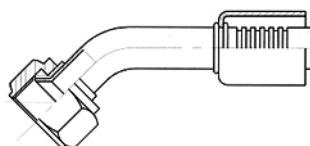
**53701**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-04	-06	7/16-20	5/16	-	BU-52701-04-06-S	BU-53701-04-06-S
-06	-06	5/8-18	5/16	-	BU-52701-06-06-S	BU-53701-06-06-S
-06	-08	5/8-18	13/32	-	BU-52701-06-08-S	BU-53701-06-08-S
-08	-06	3/4-16	5/16	-	BU-52701-08-06-S	BU-53701-08-06-S
-08	-08	3/4-16	13/32	-	BU-52701-08-08-S	BU-53701-08-08-S
-08	-10	3/4-16	1/2	-	BU-52701-08-10-S	BU-53701-08-10-S
-10	-08	7/8-14	13/32	-	BU-52701-10-08-S	-
-10	-10	7/8-14	1/2	-	BU-52701-10-10-S	BU-53701-10-10-S
-10	-12	7/8-14	5/8	-	BU-52701-10-12-S	-
-12	-12	1.1/16-14	5/8	-	BU-52701-12-12-S	BU-53701-12-12-S

45° elbow, SAE 45° female swivel, UNF thread



**52702**



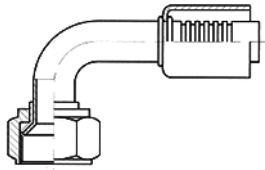
**53702**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-04	-06	7/16-20	5/16	-	BU-52702-04-06-S	BU-53702-04-06-S
-06	-06	5/8-18	5/16	-	BU-52702-06-06-S	BU-53702-06-06-S
-06	-08	5/8-18	13/32	-	BU-52702-06-08-S	-
-08	-06	3/4-16	5/16	-	BU-52702-08-06-S	BU-53702-08-06-S
-08	-08	3/4-16	13/32	-	BU-52702-08-08-S	BU-53702-08-08-S
-08	-10	3/4-16	1/2	-	BU-52702-08-10-S	BU-53702-08-10-S
-10	-08	7/8-14	13/32	-	BU-52702-10-08-S	-
-10	-10	7/8-14	1/2	-	BU-52702-10-10-S	BU-53702-10-10-S
-10	-12	7/8-14	5/8	-	BU-52702-10-12-S	-
-12	-12	1.1/16-14	5/8	-	BU-52702-12-12-S	BU-53702-12-12-S

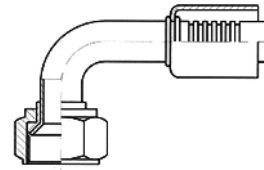
# INDUSTRIAL HOSES - air-conditioning

## Fittings for air-conditioning rubber hoses

90° elbow, SAE 45° female swivel, UNF thread



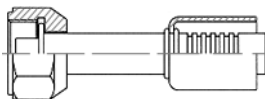
**52703**



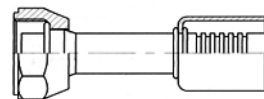
**53703**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-04	-06	7/16-20	5/16	-	BU-52703-04-06-S	-
-06	-06	5/8-18	5/16	-	BU-52703-06-06-S	BU-53703-06-06-S
-06	-08	5/8-18	13/32	-	BU-52703-06-08-S	-
-08	-06	3/4-16	5/16	-	BU-52703-08-06-S	-
-08	-08	3/4-16	13/32	-	BU-52703-08-08-S	BU-53703-08-08-S
-08	-10	3/4-16	1/2	-	BU-52703-08-10-S	-
-10	-08	7/8-14	13/32	-	BU-52703-10-08-S	-
-10	-10	7/8-14	1/2	-	BU-52703-10-10-S	BU-53703-10-10-S
-10	-12	7/8-14	5/8	-	BU-52703-10-12-S	-
-12	-12	1.1/16-14	5/8	-	BU-52703-12-12-S	BU-53703-12-12-S

O-ring pilot female swivel, UNF thread



**52704**



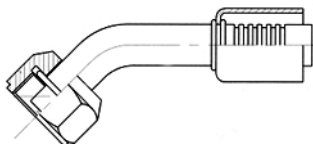
**53704**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-06	-06	5/8-18	5/16	-	BU-52704-06-06-S	BU-53704-06-06-S
-06	-08	5/8-18	13/32	-	BU-52704-06-08-S	BU-53704-06-08-S
-08	-06	3/4-16	5/16	-	BU-52704-08-06-S	BU-53704-08-06-S
-08	-08	3/4-16	13/32	-	BU-52704-08-08-S	BU-53704-08-08-S
-08	-10	3/4-16	1/2	-	BU-52704-08-10-S	BU-53704-08-10-S
-10	-08	7/8-14	13/32	-	BU-52704-10-08-S	BU-53704-10-08-S
-10	-10	7/8-14	1/2	-	BU-52704-10-10-S	BU-53704-10-10-S
-10	-12	7/8-14	5/8	-	BU-52704-10-12-S	BU-53704-10-12-S
-12	-10	1.1/16-14	1/2	-	BU-52704-12-10-S	BU-53704-12-10-S
-12	-12	1.1/16-14	5/8	-	BU-52704-12-12-S	BU-53704-12-12-S
-12	-14	1.1/16-14	3/4	-	BU-52704-12-14-S	-

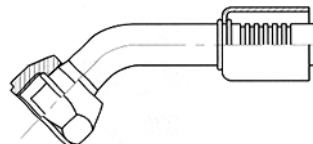
# INDUSTRIAL HOSES - air-conditioning

## Fittings for air-conditioning rubber hoses

45° elbow, O-ring pilot female swivel, UNF thread



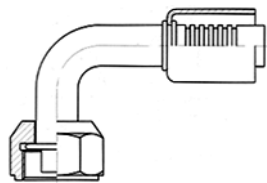
**52705**



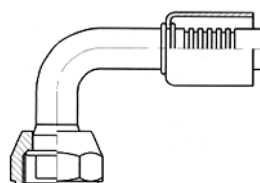
**53705**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-06	-06	5/8-18	5/16	-	BU-52705-06-06-S	BU-53705-06-06-S
-06	-08	5/8-18	13/32	-	BU-52705-06-08-S	-
-08	-08	3/4-16	13/32	-	BU-52705-08-08-S	BU-53705-08-08-S
-08	-10	3/4-16	1/2	-	BU-52705-08-10-S	BU-53705-08-10-S
-10	-10	7/8-14	1/2	-	BU-52705-10-10-S	BU-53705-10-10-S
-10	-12	7/8-14	5/8	-	BU-52705-10-12-S	BU-53705-10-12-S
-10	-14	7/8-14	3/4	-	BU-52705-10-14-S	-
-12	-12	1.1/16-14	5/8	-	BU-52705-12-12-S	BU-53705-12-12-S
-12	-14	1.1/16-14	3/4	-	BU-52705-12-14-S	-

90° elbow, O-ring pilot female swivel, UNF thread



**52706**



**53706**

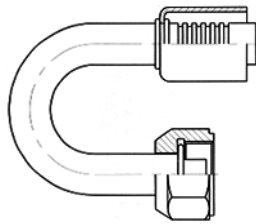
fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-06	-06	5/8-18	5/16	-	BU-52706-06-06-S	BU-53706-06-06-S
-06	-08	5/8-18	13/32	-	BU-52706-06-08-S	BU-53706-06-08-S
-08	-08	3/4-16	13/32	-	BU-52706-08-08-S	BU-53706-08-08-S
-08	-10	3/4-16	1/2	-	BU-52706-08-10-S	BU-53706-08-10-S
-10	-08	7/8-14	13/32	-	BU-52706-10-08-S	BU-53706-10-08-S
-10	-10	7/8-14	1/2	-	BU-52706-10-10-S	BU-53706-10-10-S
-10	-12	7/8-14	5/8	-	BU-52706-10-12-S	BU-53706-10-12-S
-10	-14	7/8-14	3/4	-	BU-52706-10-14-S	-
-12	-10	1.1/16-14	1/2	-	BU-52706-12-10-S	BU-53706-12-10-S
-12	-12	1.1/16-14	5/8	-	BU-52706-12-12-S	BU-53706-12-12-S
-12	-14	1.1/16-14	3/4	-	BU-52706-12-14-S	-



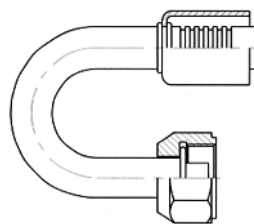
# INDUSTRIAL HOSES - air-conditioning

## Fittings for air-conditioning rubber hoses

180° elbow, O-ring pilot female swivel, UNF thread



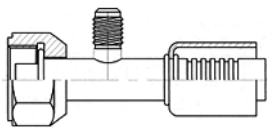
**52771**



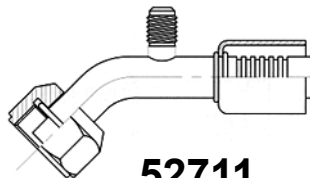
**53771**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-06	-06	5/8-18	5/16	-	BU-52771-06-06-S	BU-53771-06-06-S
-08	-08	3/4-16	13/32	-	BU-52771-08-08-S	BU-53771-08-08-S
-10	-10	7/8-14	1/2	-	BU-52771-10-10-S	BU-53771-10-10-S
-12	-12	1.1/16-14	5/8	-	BU-52771-12-12-S	BU-53771-12-12-S

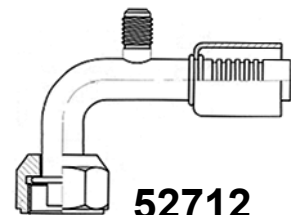
O-ring pilot female swivel, UNF thread, R12 valve



**52710**



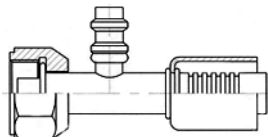
**52711**



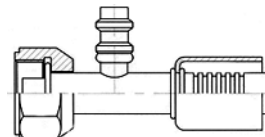
**52712**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping	crimping 45°	crimping 90°
					code	code	code
-06	-06	5/8-18	5/16	1/4	BU-52710-06-06-S	BU-52711-06-06-S	BU-52712-06-06-S
-08	-08	3/4-16	13/32	1/4	BU-52710-08-08-S	BU-52711-08-08-S	BU-52712-08-08-S
-10	-10	7/8-14	1/2	1/4	BU-52710-10-10-S	BU-52711-10-10-S	BU-52712-10-10-S
-12	-12	1.1/16-14	5/8	1/4	BU-52710-12-12-S	BU-52711-12-12-S	BU-52712-12-12-S

O-ring pilot female swivel, UNF thread, R134 valve



**52717**



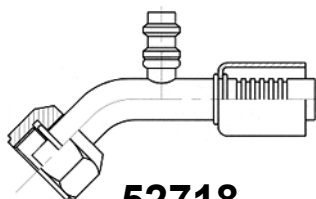
**53717**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size [mm]	crimping	crimping - LW hose
					code	code
-06	-06	5/8-18	5/16	16	BU-52717-06-06-HP-S	BU-53717-06-06-HP-S
-08	-08	3/4-16	13/32	16	BU-52717-08-08-HP-S	BU-53717-08-08-HP-S
-08	-10	3/4-16	1/2	16	BU-52717-08-10-LP-S	BU-53717-08-10-LP-S
-10	-10	7/8-14	1/2	13	BU-52717-10-10-LP-S	BU-53717-10-10-LP-S
-10	-12	7/8-14	5/8	13	BU-52717-10-12-LP-S	BU-53717-10-12-LP-S
-12	-12	1.1/16-14	5/8	13	BU-52717-12-12-LP-S	BU-53717-12-12-LP-S
-12	-14	1.1/16-14	3/4	13	BU-52717-12-14-LP-S	BU-53717-12-14-LP-S

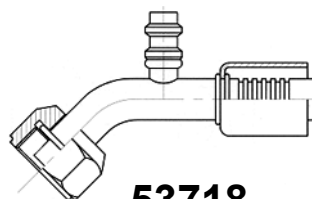
# INDUSTRIAL HOSES - air-conditioning

## Fittings for air-conditioning rubber hoses

45° elbow, O-ring pilot female swivel, UNF thread, R134 valve



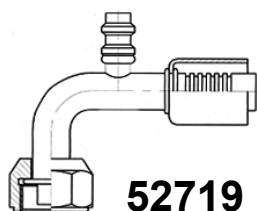
**52718**



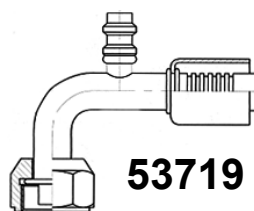
**53718**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size [mm]	crimping	crimping - LW hose
					code	code
-06	-06	5/8-18	5/16	16	BU-52718-06-06-HP-S	BU-53718-06-06-HP-S
-08	-08	3/4-16	13/32	16	BU-52718-08-08-HP-S	BU-53718-08-08-HP-S
-10	-10	7/8-14	1/2	13	BU-52718-10-10-LP-S	BU-53718-10-10-LP-S
-10	-12	7/8-14	5/8	13	BU-52718-10-12-LP-S	BU-53718-10-12-LP-S
-12	-12	1.1/16-14	5/8	13	BU-52718-12-12-LP-S	BU-53718-12-12-LP-S

90° elbow, O-ring pilot female swivel, UNF thread, R134 valve



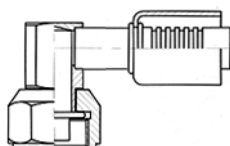
**52719**



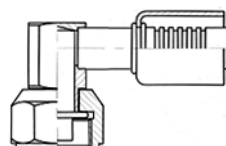
**53719**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size [mm]	crimping	crimping - LW hose
					code	code
-06	-06	5/8-18	5/16	16	BU-52719-06-06-HP-S	BU-53719-06-06-HP-S
-08	-08	3/4-16	13/32	16	BU-52719-08-08-HP-S	BU-53719-08-08-HP-S
-10	-10	7/8-14	1/2	13	BU-52719-10-10-LP-S	BU-53719-10-10-LP-S
-10	-12	7/8-14	5/8	13	BU-52719-10-12-LP-S	BU-53719-10-12-LP-S
-12	-12	1.1/16-14	5/8	13	BU-52719-12-12-LP-S	BU-53719-12-12-LP-S

90° elbow, block type, O-ring pilot female swivel, UNF thread



**52740**



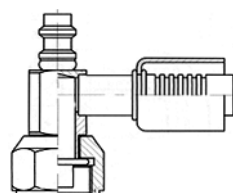
**53740**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-06	-06	5/8-18	5/16	-	BU-52740-06-06-S	BU-53740-06-06-S
-08	-08	3/4-16	13/32	-	BU-52740-08-08-S	BU-53740-08-08-S
-10	-10	7/8-14	1/2	-	BU-52740-10-10-S	BU-53740-10-10-S
-12	-12	1.1/16-14	5/8	-	BU-52740-12-12-S	BU-53740-12-12-S

# INDUSTRIAL HOSES - air-conditioning

## Fittings for air-conditioning rubber hoses

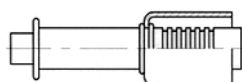
90° elbow, block type, O-ring pilot female swivel, UNF thread, R134 valve



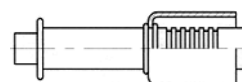
**52742**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size [mm]	crimping	crimping - LW hose
					code	code
-06	-06	5/8-18	5/16	16	BU-52742-06-06-HP-S	-
-08	-08	3/4-16	13/32	16	BU-52742-08-08-HP-S	-
-10	-10	7/8-14	1/2	13	BU-52742-10-10-LP-S	-
-12	-12	1.1/16-14	5/8	13	BU-52742-12-12-LP-S	-

O-ring pilot. without nut



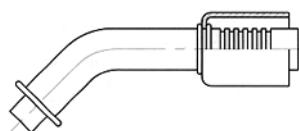
**52724**



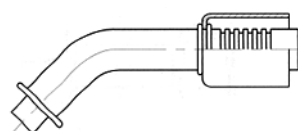
**53724**

fitting connection size	hose dash	tube size	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-06	-06	8.5	5/16	-	BU-52724-06-06-S	BU-53724-06-06-S
-06	-08	8.5	13/32	-	BU-52724-06-08-S	BU-53724-06-08-S
-08	-06	11.6	5/16	-	BU-52724-08-06-S	BU-53724-08-06-S
-08	-08	11.6	13/32	-	BU-52724-08-08-S	BU-53724-08-08-S
-10	-10	14.4	1/2	-	BU-52724-10-10-S	BU-53724-10-10-S
-10	-12	14.4	5/8	-	BU-52724-10-12-S	BU-53724-10-12-S
-12	-10	17.5	1/2	-	BU-52724-12-10-S	BU-53724-12-10-S
-12	-12	17.5	5/8	-	BU-52724-12-12-S	BU-53724-12-12-S

45° elbow. O-ring pilot. without nut



**52725**



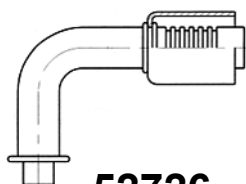
**53725**

fitting connection size	hose dash	tube size	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-06	-06	8.5	5/16	-	BU-52725-06-06-S	BU-53725-06-06-S
-08	-08	11.6	13/32	-	BU-52725-08-08-S	BU-53725-08-08-S
-10	-10	14.4	1/2	-	BU-52725-10-10-S	BU-53725-10-10-S
-12	-10	17.5	1/2	-	BU-52725-12-10-S	BU-53725-12-10-S
-12	-12	17.5	5/8	-	BU-52725-12-12-S	BU-53725-12-12-S

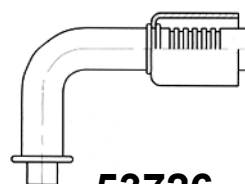
# INDUSTRIAL HOSES - air-conditioning

## Fittings for air-conditioning rubber hoses

90° elbow. O-ring pilot, without nut



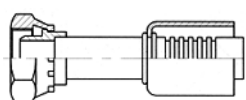
**52726**



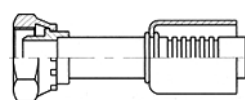
**53726**

fitting connection size	hose dash	tube size	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-06	-06	8.5	5/16	-	BU-52726-06-06-S	BU-53726-06-06-S
-08	-08	11.6	13/32	-	BU-52726-08-08-S	BU-53726-08-08-S
-10	-10	14.4	1/2	-	BU-52726-10-10-S	BU-53726-10-10-S
-12	-10	17.5	1/2	-	BU-52726-12-10-S	BU-53726-12-10-S
-12	-12	17.5	5/8	-	BU-52726-12-12-S	BU-53726-12-12-S

Compressor fitting female swivel, UNF thread



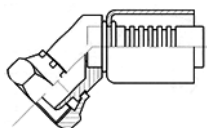
**52707**



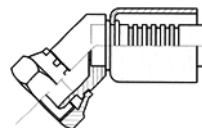
**53707**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-10	-08	1-14	13/32	-	BU-52707-10-08-S	BU-53707-10-08-S
-10	-10	1-14	1/2	-	BU-52707-10-10-S	BU-53707-10-10-S
-10	-12	1-14	5/8	-	BU-52707-10-12-S	BU-53707-10-12-S

45° elbow, compressor fitting female swivel, UNF thread



**52708**



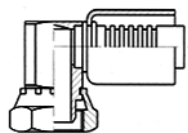
**53708**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-10	-08	1-14	13/32	-	BU-52708-10-08-S	BU-53708-10-08-S
-10	-10	1-14	1/2	-	BU-52708-10-10-S	BU-53708-10-10-S
-10	-12	1-14	5/8	-	BU-52708-10-12-S	BU-53708-10-12-S

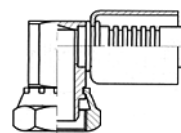
# INDUSTRIAL HOSES - air-conditioning

## Fittings for air-conditioning rubber hoses

90° elbow, compressor fitting female swivel, UNF thread



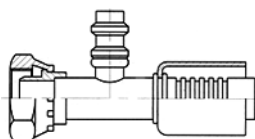
**52709**



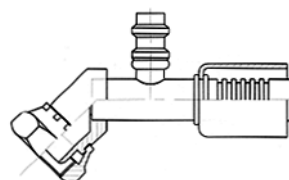
**53709**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-10	-08	1-14	13/32	-	BU-52709-10-08-S	BU-53709-10-08-S
-10	-10	1-14	1/2	-	BU-52709-10-10-S	BU-53709-10-10-S
-10	-12	1-14	5/8	-	BU-52709-10-12-S	BU-53709-10-12-S

Compressor fitting female swivel, UNF thread, R134 valve



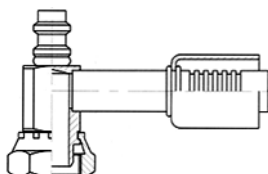
**52733**



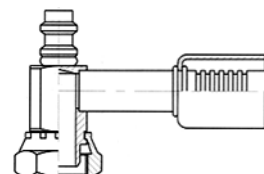
**52734**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size [mm]	crimping	crimping 45°
					code	code
-10	-08	1-14	13/32	13	BU-52733-10-08-LP-S	BU-52734-10-08-LP-S
-10	-10	1-14	1/2	13	BU-52733-10-10-LP-S	BU-52734-10-10-LP-S
-10	-12	1-14	5/8	13	BU-52733-10-12-LP-S	BU-52734-10-12-LP-S

90° elbow, compressor fitting female swivel, UNF thread, R134 valve



**52735**



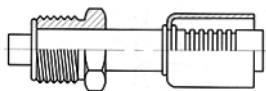
**53735**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size [mm]	crimping	crimping - LW hose
					code	code
-10	-08	1-14	13/32	13	BU-52735-10-08-LP-S	BU-53735-10-08-S
-10	-10	1-14	1/2	13	BU-52735-10-10-LP-S	BU-53735-10-10-S
-10	-12	1-14	5/8	13	BU-52735-10-12-LP-S	BU-53735-10-12-S

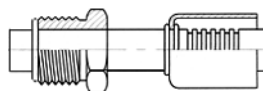
# INDUSTRIAL HOSES - air-conditioning

## Fittings for air-conditioning rubber hoses

O-ring pilot male swivel, UNF thread



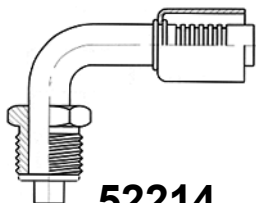
**52213**



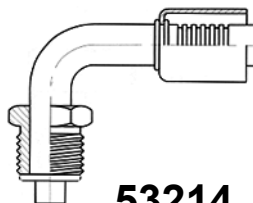
**53213**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-06	-06	5/8-18	5/16	-	BU-52213-06-06-S	BU-53213-06-06-S
-08	-08	3/4-18	13/32	-	BU-52213-08-08-S	BU-53213-08-08-S
-10	-10	7/8-18	1/2	-	BU-52213-10-10-S	BU-53213-10-10-S
-10	-12	7/8-18	5/8	-	BU-52213-10-12-S	BU-53213-10-12-S
-12	-12	1.1/16-16	5/8	-	BU-52213-12-12-S	BU-53213-12-12-S

90° elbow, O-ring pilot male swivel, UNF thread



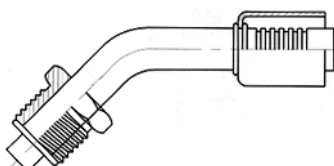
**52214**



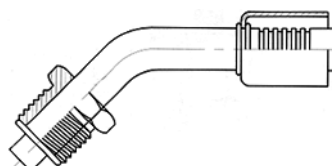
**53214**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-06	-06	5/8-18	5/16	-	BU-52214-06-06-S	BU-53214-06-06-S
-08	-08	3/4-18	13/32	-	BU-52214-08-08-S	BU-53214-08-08-S
-10	-10	7/8-18	1/2	-	BU-52214-10-10-S	BU-53214-10-10-S
-12	-12	1.1/16-16	5/8	-	BU-52214-12-12-S	BU-53214-12-12-S

45° elbow, O-ring pilot male swivel, UNF thread



**52215**



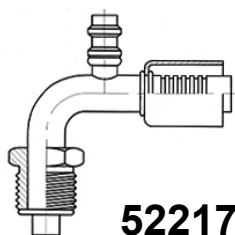
**53215**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-06	-06	5/8-18	5/16	-	BU-52215-06-06-S	BU-53215-06-06-S
-08	-08	3/4-18	13/32	-	BU-52215-08-08-S	BU-53215-08-08-S
-10	-10	7/8-18	1/2	-	BU-52215-10-10-S	BU-53215-10-10-S
-10	-12	7/8-18	5/8	-	BU-52215-10-12-S	BU-53215-10-12-S
-12	-12	1.1/16-16	5/8	-	BU-52215-12-12-S	BU-53215-12-12-S

# INDUSTRIAL HOSES - air-conditioning

## Fittings for air-conditioning rubber hoses

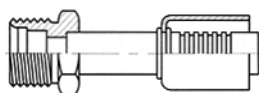
90° elbow, O-ring pilot male swivel, UNF thread, R134 valve



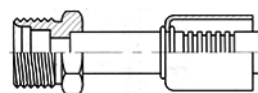
**52217**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size [mm]	crimping
					code
-06	-06	5/8-18	5/16	16	BU-52217-06-06-HP-S
-08	-08	3/4-18	13/32	16	BU-52217-08-08-HP-S
-10	-10	7/8-18	1/2	13	BU-52217-10-10-LP-S
-12	-12	1.1/16-16	5/8	13	BU-52217-12-12-LP-S

O-ring male, UNF thread



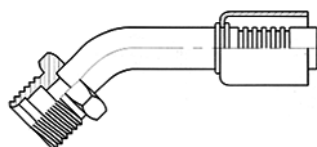
**52206**



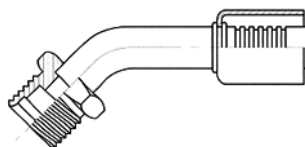
**53206**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-06	-06	5/8-18	5/16	-	BU-52206-06-06-S	BU-53206-06-06-S
-06	-08	5/8-18	13/32	-	BU-52206-06-08-S	BU-53206-06-08-S
-08	-08	3/4-16	13/32	-	BU-52206-08-08-S	BU-53206-08-08-S
-08	-10	3/4-16	1/2	-	BU-52206-08-10-S	BU-53206-08-10-S
-10	-08	7/8-14	13/32	-	BU-52206-10-08-S	BU-53206-10-08-S
-10	-10	7/8-14	1/2	-	BU-52206-10-10-S	BU-53206-10-10-S
-10	-12	7/8-14	5/8	-	BU-52206-10-12-S	BU-53206-10-12-S
-12	-12	1.1/16-14	5/8	-	BU-52206-12-12-S	BU-53206-12-12-S

45° elbow, O-ring male, UNF thread



**52207**



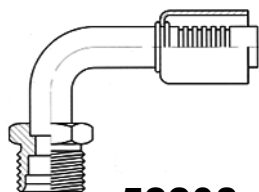
**53207**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-06	-06	5/8-18	5/16	-	BU-52207-06-06-S	BU-53207-06-06-S
-08	-08	3/4-16	13/32	-	BU-52207-08-08-S	BU-53207-08-08-S
-10	-10	7/8-14	1/2	-	BU-52207-10-10-S	BU-53207-10-10-S
-10	-12	7/8-14	5/8	-	BU-52207-10-12-S	BU-53207-10-12-S
-12	-12	1.1/16-14	5/8	-	BU-52207-12-12-S	BU-53207-12-12-S

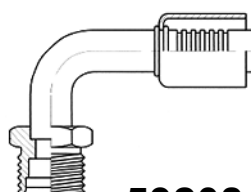
# INDUSTRIAL HOSES - air-conditioning

## Fittings for air-conditioning rubber hoses

90° elbow, O-ring male, UNF thread



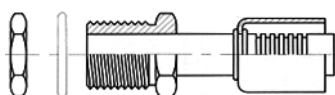
**52208**



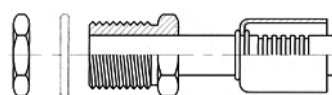
**53208**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-06	-06	5/8-18	5/16	-	BU-52208-06-06-S	BU-53208-06-06-S
-08	-08	3/4-16	13/32	-	BU-52208-08-08-S	BU-53208-08-08-S
-10	-10	7/8-14	1/2	-	BU-52208-10-10-S	BU-53208-10-10-S
-10	-12	7/8-14	5/8	-	BU-52208-10-12-S	BU-53208-10-12-S
-12	-12	1.1/16-14	5/8	-	BU-52208-12-12-S	BU-53208-12-12-S

O-ring male, bulkhead, UNF thread



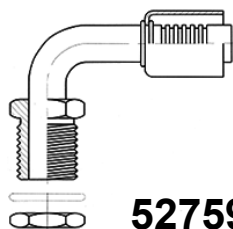
**52758**



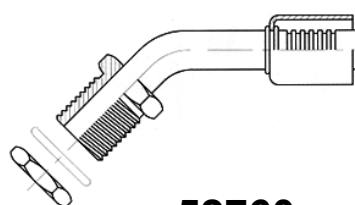
**53758**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-06	-06	5/8-18	5/16	-	BU-52758-06-06-S	BU-53758-06-06-S
-08	-08	3/4-16	13/32	-	BU-52758-08-08-S	BU-53758-08-08-S
-10	-10	7/8-14	1/2	-	BU-52758-10-10-S	BU-53758-10-10-S
-12	-12	1.1/16-14	5/8	-	BU-52758-12-12-S	BU-53758-12-12-S

90° elbow, O-ring male, bulkhead, UNF thread



**52759**



**52760**

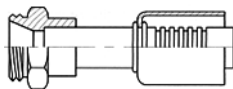
fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping 90°	crimping 45°
					code	code
-06	-06	5/8-18	5/16	-	BU-52759-06-06-S	BU-52760-06-06-S
-08	-08	3/4-16	13/32	-	BU-52759-08-08-S	BU-52760-08-08-S
-08	-10	3/4-16	1/2	-	-	BU-52760-08-10-S
-10	-10	7/8-14	1/2	-	BU-52759-10-10-S	BU-52760-10-10-S
-10	-12	7/8-14	5/8	-	-	BU-52760-10-12-S
-12	-12	1.1/16-14	5/8	-	BU-52759-12-12-S	BU-52760-12-12-S



# INDUSTRIAL HOSES - air-conditioning

## Fittings for air-conditioning rubber hoses

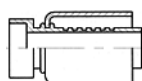
Quick disconnection male, UNF thread



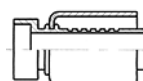
**53747**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping - LW hose
					code
-08	-06	7/8-20	5/16	-	BU-53747-08-06-S
-12	-10	1.1/4-18	1/2	-	BU-53747-12-10-S

Braze nipple



**52743**



**53743**

fitting connection size	hose dash	thread [inch]	hose I.D. [inch]	valve size	crimping	crimping - LW hose
					code	code
-06	-06	3/8	5/16	-	BU-52743-06-06-S	BU-53743-06-06-S
-08	-08	1/2	13/32	-	BU-52743-08-08-S	BU-53743-08-08-S
-10	-10	5/8	1/2	-	BU-52743-10-10-S	BU-53743-10-10-S
-12	-12	3/4	5/8	-	BU-52743-12-12-S	BU-53743-12-12-S



before crimping

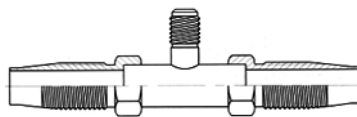


after crimping

# INDUSTRIAL HOSES - air-conditioning

## Fittings for air-conditioning rubber hoses

In-line splicer, R12 valve



**7030 7025**

hose dash 1	hose dash 2	hose I.D. 1 [inch]	hose I.D. 2 [inch]	valve size	reusable	
					code	code
-06	-06	5/16	5/16	3/16	BU-7030-06-06-S	-
-06	-06	5/16	13/32	1/4	-	BU-7025-06-06-S
-08	-08	13/32	13/32	3/16	BU-7030-08-08-S	-
-08	-08	13/32	1/2	1/4	-	BU-7025-08-08-S
-10	-10	1/2	1/2	1/4	-	BU-7025-10-10-S
-12	-12	5/8	5/8	1/4	-	BU-7025-12-12-S

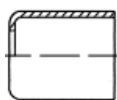
In-line splicer



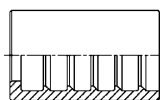
**7086**

hose dash 1	hose dash 2	hose I.D. 1 [inch]	hose I.D. 2 [inch]	valve size	reusable
					code
-06	-06	5/16	5/16	-	BU-7086-06-06-S
-08	-08	13/32	13/32	-	BU-7086-08-08-S
-10	-10	1/2	1/2	-	BU-7086-10-10-S
-12	-12	5/8	5/8	-	BU-7086-12-12-S

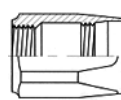
Ferrule



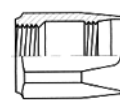
**2051**



**2056**



**1052**

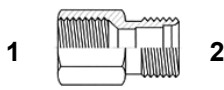
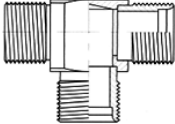


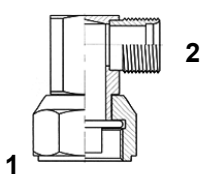
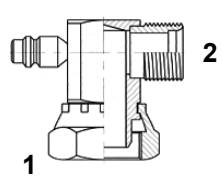
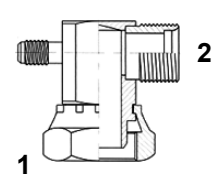
**115**

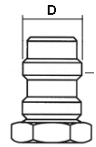
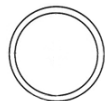



hose dash	hose I.D. [inch]	crimping 3055 hose	crimping 3056 hose	reusable 3055 hose	reusable 3056 hose
		code	code	code	code
-04	3/16	-	BU-2056-04-S	-	BU-115-04
-06	5/16	BU-2051-06	-	BU-1052-06	BU-115-06
-08	13/32	BU-2051-08	-	BU-1052-08	BU-115-08
-10	1/2	BU-2051-10	-	BU-1052-10	BU-115-10
-12	5/8	BU-2051-12	-	BU-1052-12	BU-115-12
-16	7/8	-	BU-2056-16-S	-	BU-115-16
-20	1. 1/8	-	BU-2056-20-S	-	BU-115-20
-24	1. 3/8	-	-	-	BU-115-24

# INDUSTRIAL HOSES - air-conditioning

## Fittings for air-conditioning rubber hoses

Female UNF SAE 45° / UNF male			Tee 3 x UNF male	
 <b>7050</b>			 <b>8048</b>	
code	hose I.D. 1 [inch]	hose I.D. 2 [inch]	code	thread [inch]
BU-7050-06-06-S	5/8-18	5/8-18	BU-8048-06-06-S	5/8-18
BU-7050-08-08-S	3/4-16	3/4-16	BU-8048-08-08-S	3/4-16
BU-7050-08-10-S	3/4-16	7/8-14	BU-8048-10-10-S	7/8-14
BU-7050-10-10-S	7/8-14	7/8-14	BU-8048-12-12-S	1.1/16-14

Adapter 90° UNF female / UNF male			90° UNF female/ UNF male with R134 valve			90° UNF female/ UNF male with R12 valve		
 <b>7065</b>			 <b>7066</b>			 <b>7067</b>		
code	hose I.D. 1 [inch]	hose I.D. 2 [inch]	code	hose I.D. 1 [inch]	hose I.D. 2 [inch]	code	hose I.D. 1 [inch]	hose I.D. 2 [inch]
BU-7065-06-06-S	-	-	-	-	-	-	-	-
BU-7065-08-08-S	3/4-16	3/4-16	-	-	-	-	-	-
-	-	-	BU-7066-10-06-S	1-14	5/8-18	-	-	-
-	-	-	BU-7066-10-08-S	1-14	3/4-16	BU-7067-10-08-S	1-14	3/4-16
BU-7065-10-10-S	7/8-14	7/8-14	BU-7066-10-10-S	1-14	7/8-14	BU-7067-10-10-S	1-14	7/8-14

Retrofit adapter R12/R134A - protection caps - R134A valve					O-ring R12/R134A		
 <b>7034/35/36</b>					 <b>7028</b>		
 <b>7037</b>							
 <b>7038</b>							
 <b>7039</b>							
code	thread size [inch]	D [mm]	code	for adapter	code	O.D. [mm]	thickness [mm]
BU-7034-S	3/8-24	16	BU-7037	BU-7034-7036	BU-7028-06	7.65	1.78
BU-7035-S	7/16-20	13	BU-7038	BU-7035	BU-7028-08	10.82	1.78
BU-7036-S	7/16-20	16	BU-7039	BU-7035	BU-7028-10	14	1.78
-	-	-	-	-	BU-7028-12	17.17	1.78

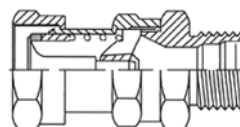
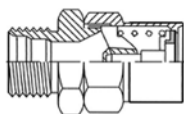
## INDUSTRIAL HOSES - air-conditioning





### Quick release couplings for air-conditioning

**Material:** Zinc-plated steel  
**Seal:** CR (from -40°C up to +120°C)  
**Fluid loss:** 1.5 g/year  
**Max. vacuum:** 2 mm Hg  
**Safety factor:** 3:1 (static pressure)  
                           2:1 (dynamic pressure)

Double shut-off, dry-break, screw-to-connect coupling designed for air-conditioning and refrigeration. Used for emptying and filling installations with fluid (refrigerant recharging). A socket has a special nut that allows panel mounting. Acceptable connection at residual pressure (static pressure left in the system when the drive is turned off). The coupling can be disconnected at maximum working pressure.



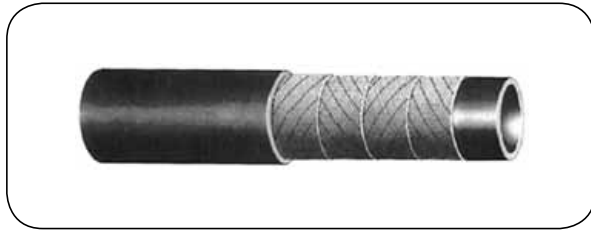
 Socket	code	size	thread size	 Plug	code	size	thread size
	BU-24421-06	1/4"	5/8"-18		BU-24422-06	1/4"	5/8"-18
	BU-24421-08	3/8"	3/4"-16		BU-24422-08	3/8"	3/4"-16
	BU-24421-10	1/2"	7/8"-14		BU-24422-10	1/2"	7/8"-14
	BU-24421-12	3/4"	1.1/16"-14		BU-24422-12	3/4"	1.1/16"-14

#### Working parameters:

size	air inclusion / fluid loss (during connection and disconnection) [cm³]	working pressure [bar]		
		coupling connected	socket disconnected	plug disconnected
1/4"	0.02	330	175	35
3/8"	0.05	133	70	60
1/2"	0.1	183	183	50
3/4"	0.1	143	143	50

## INDUSTRIAL HOSES - brake

### Rubber brake hoses



#### RAIL BRAKE UIC-830-I-85®

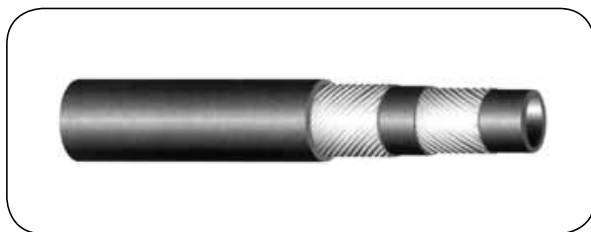
**Internal layer:** Black synthetic rubber

**Reinforcement:** Synthetic braid

**External layer:** Black synthetic rubber

Flexible hose used for air transfer in railway air brake systems according to UIC-830-I-85 standards.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-RAILBUIC-16	16	32	10	70	0.52	120
IV-RAILBUIC-18	18	32	10	70	0.67	120
IV-RAILBUIC-22	22	38	10	70	0.75	120
IV-RAILBUIC-28	28	46	10	70	0.82	120
IV-RAILBUIC-30	30	46	10	70	0.86	120
IV-RAILBUIC-35	35	51	10	70	0.95	120



#### AIR BRAKE

**Internal layer:** Black EPDM rubber

**Reinforcement:** High strength synthetic braid

**External layer:** Black EPDM rubber

**Working temp.:** From -40°C up to +70°C

Hose used for air transfer in car brake systems. Manufactured according to DIN 74310 standards.

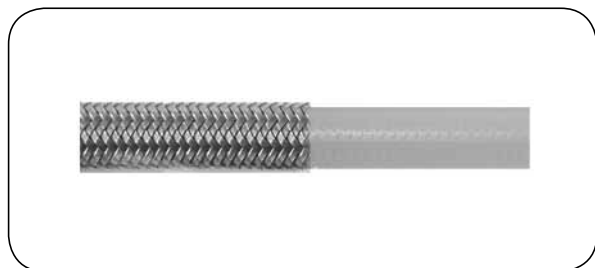
code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
IV-AIRBRAKE-DIN-11	11	18	10	25	0.17	100
IV-AIRBRAKE-DIN-13	13	25	10	25	0.40	100

## INDUSTRIAL HOSES - brake

### PTFE brake hoses DN3

Brake hoses are made of PTFE covered with stainless steel wire braid according to SAE J1401 specification. The materials applied in the construction eliminate any changes of length or expansion thus ensuring constant size under pressure and protect against any age-related loss of physical properties. A version with additional polyurethane cover that guarantees increased resistance to abrasion is available on request.

There are two kinds of fittings designed for flexible brake hose assemblies: crimped and reusable fittings. The use of reusable fittings allows on-site assembly (no crimping machine required).



#### OBHN

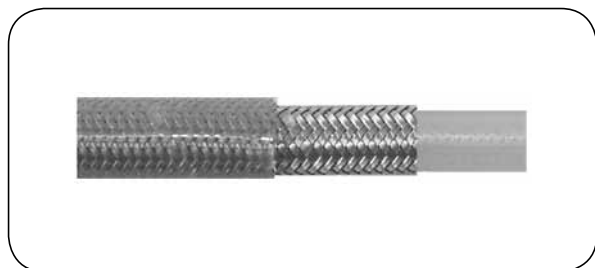
**Internal layer:** PTFE

**Reinforcement:** Single steel wire braid

**Working temp.:** From -40°C up to +160°C

Hose designed for car brake systems. Manufactured according to SAE J1401 standards. Designed for pressure applications in hydraulic installations. Resistant to high temperature. The internal and external layer resistant to aggressive chemical fluids, DOT3 and DOT4 brake fluid. Suitable for ABS brake system - to reduce pulsation effect.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [g/m]	standard length [m]
RK-OBHN-03	3.5	6.3	210	840	38	45	10



#### OBHR

**Internal layer:** PTFE

**Reinforcement:** Single steel wire braid

**External layer:** Abrasion resistance polyurethane

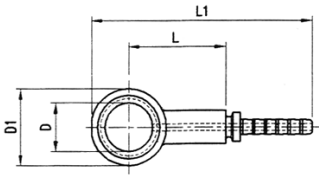
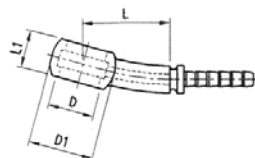
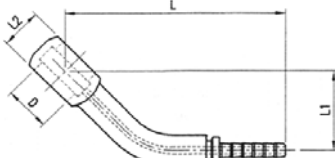
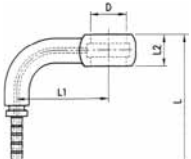
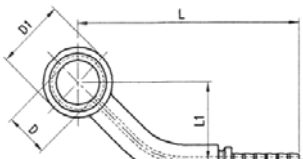
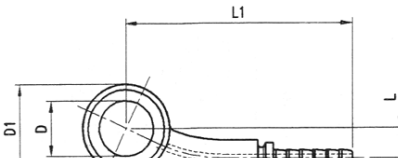
**Working temp.:** From -40°C up to +130°C

Hose designed for car brake systems. Manufactured according to SAE J1401 standards. Designed for pressure applications in hydraulic installations. Resistant to high temperature. The internal and external layer resistant to aggressive chemical fluids, DOT3 and DOT4 brake fluid. Suitable for ABS brake system - to reduce pulsation effect. Translucent as a standard. Available in yellow, red, blue or black colour on request.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [g/m]	standard length [m]
RK-OBHR-03	3.2	7.6	210	840	38	90	10

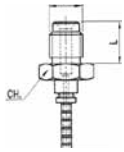
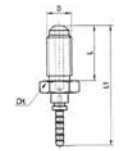
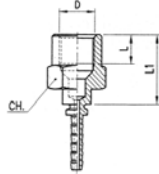
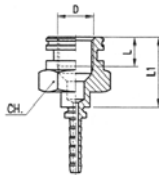
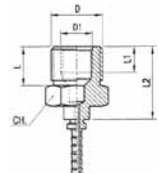
# INDUSTRIAL HOSES - brake

## Fittings for PTFE brake hoses DN3 - crimp

description	code	material	D [mm]	D1 [mm]	L [mm]	L1 [mm]	L2 [mm]
<b>Straight BANJO</b> 	RK-O-ADCPN	chromium plated steel	10.2	16	26	52	-
	RK-O-ADMPN	chromium plated steel	10.2	16	36	62	-
	RK-O-EDCP	anodized aluminium	10.2	16	26	52	-
	RK-O-EDMP		10.2	16	36	62	-
	RK-O-EDLP		10.2	16	40	66	-
	RK-O-ADCP12N	chromium plated steel	12.2	20	24	50	-
<b>BANJO side 15°</b> 	RK-O-A15PN	chromium plated steel	10.2	16	25.5	9	-
	RK-O-E15P	anodized aluminium	10.2	16	25.5	9	-
<b>BANJO side 45°</b> 	RK-O-A45PN	chromium plated steel	10.2	-	50	13	9
	RK-O-E45P	anodized aluminium	10.2	-	50	13	9
<b>BANJO side 90°</b> 	RK-O-A90PN	chromium plated steel	10.2	-	41	22	9
	RK-O-E90P	anodized aluminium	10.2	-	41	22	9
<b>BANJO lateral side 45°</b> 	RK-O-A45PLN	chromium plated steel	10.2	16	50	12	-
	RK-O-E45PL	anodized aluminium	10.2	16	50	12	-
<b>BANJO lateral side 15°</b> 	RK-O-A15PLN	chromium plated steel	10.2	16	5	44	-
	RK-O-E15PL	anodized aluminium	10.2	16	5	44	-

# INDUSTRIAL HOSES - brake

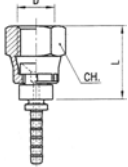
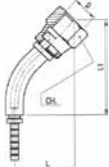
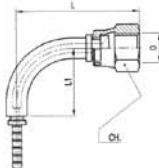
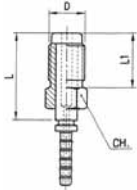
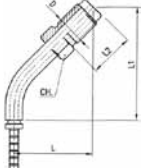
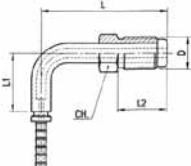
## Fittings for PTFE brake hoses DN3 - crimp

description	code	material	thread size	L [mm]	L1 [mm]	L2 [mm]	CH [mm]
Male thread. female cone seal 	RK-MACP-0N	chromium plated steel	M10x1.25	13	40	-	14
	RK-MACP-1N		M10x1	13	40	-	14
	RK-MACP-2N		3/8"-24	13	40	-	14
Male thread. male cone seal 	RK-MALP-0N	chromium plated steel	M10x1.25	23	50	-	14
	RK-MALP-1N		M10x1	23	50	-	14
	RK-MALP-2N		3/8"-24	23	50	-	14
Female thread 	RK-FACP-0N	chromium plated steel	M10x1.25	8	19	-	14
	RK-FACP-1N		M10x1	8	19	-	14
	RK-FACP-2N		3/8"-24	8	19	-	14
Female thread 	RK-FALP-0N	chromium plated steel	M10x1.25	8	20	-	17
	RK-FALP-1N		M10x1	8	20	-	17
	RK-FALP-2N		3/8"-24	8	20	-	17
Male / female thread 	RK-MFALP-0N	chromium plated steel	M16x1.5 M10x1.25	12	8	23	17
	RK-MFALP-1N		M16x1.5 M10x1	12	8	23	17
	RK-MFALP-2N		M16x1.5 3/8"-24	12	8	23	17



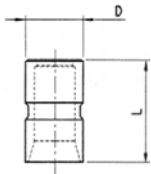
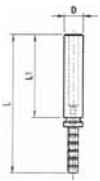
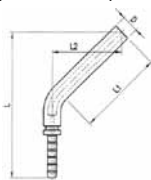
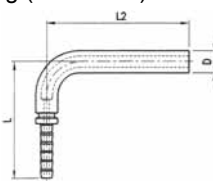
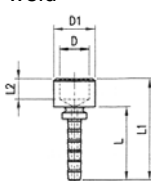
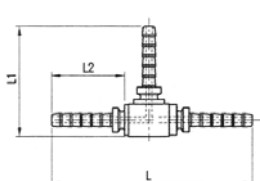
# INDUSTRIAL HOSES - brake

## Fittings for PTFE brake hoses DN3 - crimp

description	code	material	thread size	L [mm]	L1 [mm]	L2 [mm]	CH [mm]
Straight female (with a nut) 	RK-FAGP-0N	chromium plated steel	M10x1.25	20	-	-	14
	RK-FAGP-1N		M10x1	20	-	-	14
	RK-FAGP-2N		3/8"-24	20	-	-	14
45° female elbow (with a nut) 	RK-FAG45P-0N	chromium plated steel	M10x1.25	26	58	-	14
	RK-FAG45P-1N		M10x1	26	58	-	14
	RK-FAG45P-2N		3/8"-24	26	58	-	14
90° female elbow (with a nut) 	RK-FAG90P-0N	chromium plated steel	M10x1.25	32	23	-	14
	RK-FAG90P-1N		M10x1	32	23	-	14
	RK-FAG90P-2N		3/8"-24	32	23	-	14
Straight male (with a nut) 	RK-MAGP-0N	chromium plated steel	M10x1.25	26	16	-	10
	RK-MAGP-1N		M10x1	26	16	-	10
	RK-MAGP-2N		3/8"-24	26	16	-	10
	RK-MAGP-12N		M12x1	26	16	-	10
45° male elbow (with a nut) 	RK-MAG45P-0N	chromium plated steel	M10x1.25	26	42	16	10
	RK-MAG45P-1N		M10x1	26	42	16	10
	RK-MAG45P-2N		3/8"-24	26	42	16	10
90° male elbow (with a nut) 	RK-MAG90P-0N	chromium plated steel	M10x1.25	38	26	16	10
	RK-MAG90P-1N		M10x1	38	26	16	10
	RK-MAG90P-2N		3/8"-24	38	26	16	10

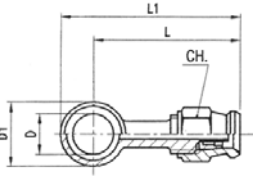
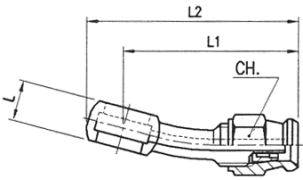
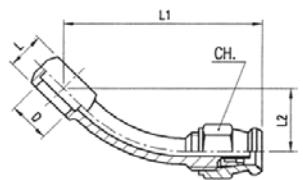
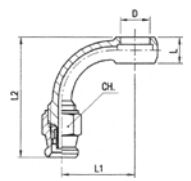
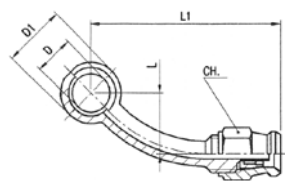
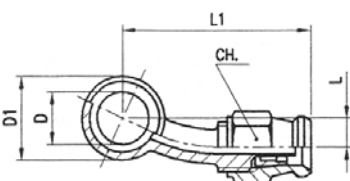
# INDUSTRIAL HOSES - brake

## Fittings for PTFE brake hoses DN3 - crimp

description	code	material	D [mm]	D1 [mm]	L [mm]	L1 [mm]	L2 [mm]
Ferrule 	RK-CAP-001N-SS (OBHN hose)	stainless steel	11	-	18	-	-
	RK-CAP-002N-SS (hose OBHR hose)	stainless steel	11	-	18	-	-
Pipe fitting 	RK-EP-6-DN	chromium plated steel	6	-	44	26	-
	RK-EP-8-DN		8	-	44	26	-
Pipe fitting (45° elbow) 	RK-EP-6-45N	chromium plated steel	6	-	50	27	-
Pipe fitting (90° elbow) 	RK-EP-6-90N	chromium plated steel	6	-	33	40	-
Fitting to be weld 	RK-TSP-0705	carbon steel	5.2	10	18	25	5
Tee 	RK-TPA-02N	chromium plated steel	4.5	-	48	27	18

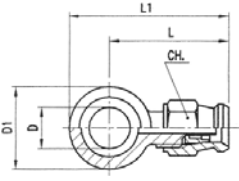
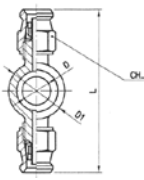
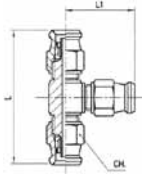
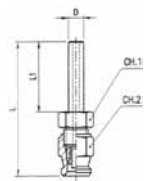
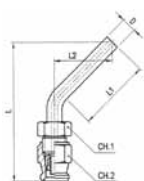
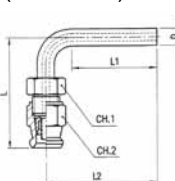
# INDUSTRIAL HOSES - brake

## Fittings for PTFE brake hoses DN3 - reusable

description	code	material	D [mm]	D1 [mm]	L [mm]	L1 [mm]	L2 [mm]	CH [mm]
<b>Straight BANJO</b> 	RK-O-ADCRN	chromium plated steel	10.2	16	37	44	-	11
	RK-O-100DC1	anodized aluminium	10.2	16	37	44	-	12
<b>BANJO side 15°</b> 	RK-O-A15RN	chromium plated steel	10.2	-	9	36	44	11
	RK-O-10015C	anodized aluminium	10.2	-	9	36	44	11
<b>BANJO side 45°</b> 	RK-O-A45RN	chromium plated steel	10.2	-	9	44	14	11
	RK-O-10045M	anodized aluminium	10.2	-	9	44	14	11
<b>BANJO side 90°</b> 	RK-O-A90RN	chromium plated steel	10.2	-	9	20	34	11
	RK-O-A90REN		10.2	-	9	43	53	11
	RK-O-10090M	anodized aluminium	10.2	-	9	20	34	12
	RK-O-10090E		10.2	-	9	43	53	12
<b>BANJO lateral side 45°</b> 	RK-O-A45RLN	chromium plated steel	10.2	16	14	44	-	11
	RK-O-100LMO	anodized aluminium	10.2	16	14	44	-	12
<b>BANJO lateral side 25°</b> 	RK-O-A25RLN	chromium plated steel	10.2	16	11	36	-	11
	RK-O-10025LC	anodized aluminium	10.2	16	11	36	-	12

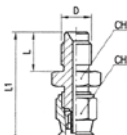
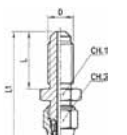
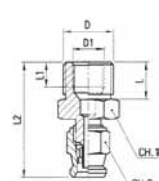
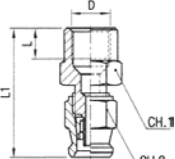
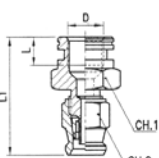
# INDUSTRIAL HOSES - brake

## Fittings for PTFE brake hoses DN3 - reusable

description	code	material	D [mm]	D1 [mm]	L [mm]	L1 [mm]	L2 [mm]	CH [mm]
<b>Short BANJO</b> 	RK-O-ACR10N	chromium plated steel	10.2	20	28	38	-	11
	RK-O-ACR11N		11.2	20	28	38	-	11
	RK-O-ACR12N		12.2	20	28	38	-	11
	RK-O-110DCO	anodized aluminium	11.2	20	28	38	-	12
	RK-O-120DCO		12.2	20	28	38	-	12
<b>Short twin BANJO</b> 	RK-O-100DCD	anodized aluminium	10.2	20	58	-	-	12
<b>Tee</b> 	RK-TAR-01N	chromium plated steel	-	-	46	23	-	11
	RK-RTT-001	anodized aluminium	-	-	46	23	-	12
<b>Pipe fitting</b> 	RK-ER-6-DN	chromium plated steel	6	-	50	26	-	11
<b>Pipe fitting (45° elbow)</b> 	RK-ER-6-45N	chromium plated steel	6	-	50	30	23	11
<b>Pipe fitting (90° elbow)</b> 	RK-ER-6-90N	chromium plated steel	6	-	40	29	35	11

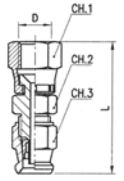
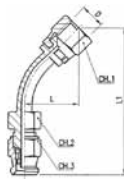
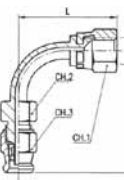
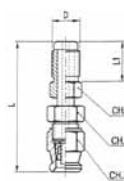
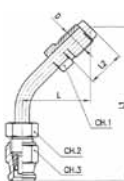
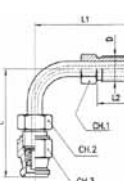
# INDUSTRIAL HOSES - brake

## Fittings for PTFE brake hoses DN3 - reusable

description	code	material	thread size	thread size	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	CH 1 [mm]	CH 2 [mm]
Male thread. female cone seal 	RK-MACR-0N	chromium plated steel	M10x1.25	-	11	32	-	-	14	11
	RK-MACR-1N		M10x1	-	11	32	-	-	14	11
	RK-MACR-2N		3/8"-24	-	11	32	-	-	14	11
Male thread. male cone seal 	RK-MALR-0N	chromium plated steel	M10x1.25	-	23	45	-	-	14	11
	RK-MALR-1N		M10x1	-	23	45	-	-	14	11
	RK-MALR-2N		3/8"-24	-	23	45	-	-	14	11
Male / female thread 	RK-MFALR-0N	chromium plated steel	M16x1.5	M10x1.25	12	8	37	-	17	11
	RK-MFALR-1N		M16x1.5	M10x1	12	8	37	-	17	11
	RK-MFALR-2N		M16x1.5	3/8"-24	12	8	37	-	17	11
Female thread 	RK-FACR-0N	chromium plated steel		M10x1.25	8	32	-	-	13	11
	RK-FACR-1N			M10x1	8	32	-	-	14	11
	RK-FACR-2N			3/8"-24	8	32	-	-	13	11
Female thread 	RK-FALR-0N	chromium plated steel		M10x1.25	8	37	-	-	17	11
	RK-FALR-1N			M10x1	8	37	-	-	17	11
	RK-FALR-2N			3/8"-24	8	37	-	-	17	11

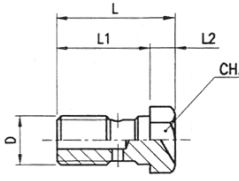
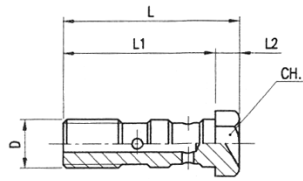
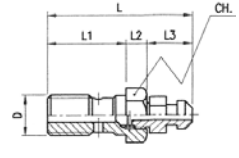
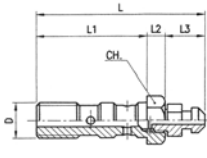
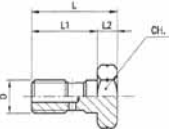
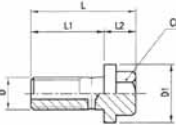
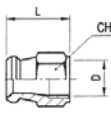
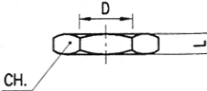
# INDUSTRIAL HOSES - brake

## Fittings for PTFE brake hoses DN3 - reusable

description	code	material	thread size	L [mm]	L1 [mm]	L2 [mm]	CH 1 [mm]	CH 2 [mm]	CH 3 [mm]
Straight female (with a nut) 	RK-FAGR-0N	chromium plated steel	M10x1.25	40	-	-	14	12	11
	RK-FAGR-1N		M10x1	40	-	-	14	12	11
	RK-FAGR-2N		3/8"-24	40	-	-	14	12	11
45° female elbow (with a nut) 	RK-FAG45R-0N	chromium plated steel	M10x1.25	22	55	-	14	12	11
	RK-FAG45R-1N		M10x1	22	55	-	14	12	11
	RK-FAG45R-2N		3/8"-24	22	55	-	14	12	11
90° female elbow (with a nut) 	RK-FAG90R-0N	chromium plated steel	M10x1.25	37	43	-	14	12	11
	RK-FAG90R-1N		M10x1	37	43	-	14	12	11
	RK-FAG90R-2N		3/8"-24	37	43	-	14	12	11
Straight male (with a nut) 	RK-MAGR-0N	chromium plated steel	M10x1.25	45	16	-	10	11	11
	RK-MAGR-1N		M10x1	45	16	-	10	11	11
	RK-MAGR-2N		3/8"-24	45	16	-	10	11	11
45° male elbow (with a nut) 	RK-MAG45R-0N	chromium plated steel	M10x1.25	22	50	16	10	11	11
	RK-MAG45R-1N		M10x1	22	50	16	10	11	11
	RK-MAG45R-2N		3/8"-24	22	50	16	10	11	11
90° male elbow (with a nut) 	RK-MAG90R-0N	chromium plated steel	M10x1.25	40	37	16	10	11	11
	RK-MAG90R-1N		M10x1	40	37	16	10	11	11
	RK-MAG90R-2N		3/8"-24	40	37	16	10	11	11

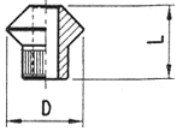
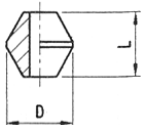
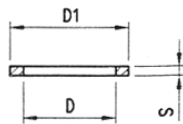
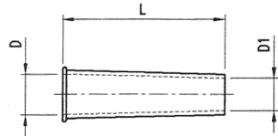
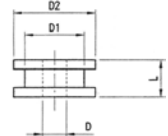
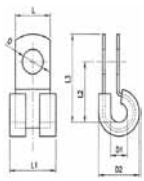
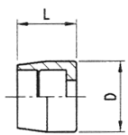
# INDUSTRIAL HOSES - brake

## Fittings for PTFE brake hoses DN3 - assembly parts

description	code	material	thread size	D1 [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	CH [mm]
<b>BANJO bolt</b> 	RK-BFSA-0N	chromium plated steel	M10x1.25	-	25	19	6	-	12
	RK-BFSA-1N		M10x1	-	25	19	6	-	12
	RK-BFSA-2N		3/8"-24	-	25	19	6	-	12
	RK-BFSE-00	anodized aluminium	M10x1.25	-	25	19	6	-	12
	RK-BFSE-01		M10x1	-	25	19	6	-	12
	RK-BFSE-02		3/8"-24	-	25	19	6	-	12
<b>BANJO double bolt</b> 	RK-BFDA-0N	chromium plated steel	M10x1.25	-	35	29	6	-	12
	RK-BFDA-1N		M10x1	-	35	29	6	-	12
	RK-BFDA-2N		3/8"-24	-	35	29	6	-	12
	RK-BFDE-00	anodized aluminium	M10x1.25	-	35	29	6	-	12
	RK-BFDE-01		M10x1	-	35	29	6	-	12
	RK-BFDE-02		3/8"-24	-	35	29	6	-	12
<b>BANJO bolt for bleed</b> 	RK-BFSAS-0N	chromium plated steel	M10x1.25	-	35	19	5	12	12
	RK-BFSAS-1N		M10x1	-	35	19	5	12	12
	RK-BFSAS-2N		3/8"-24	-	35	19	5	12	12
	RK-BFSS-00	anodized aluminium	M10x1.25	-	35	19	5	12	12
	RK-BFSS-01		M10x1	-	35	19	5	12	12
	RK-BFSS-02		3/8"-24	-	35	19	5	12	12
<b>BANJO double bolt for bleed</b> 	RK-BFDAS-0N	chromium plated steel	M10x1.25	-	46	29	5	12	12
	RK-BFDAS-1N		M10x1	-	46	29	5	12	12
	RK-BFDAS-2N		3/8"-24	-	46	29	5	12	12
	RK-BFDS-00	anodized aluminium	M10x1.25	-	46	29	5	12	12
	RK-BFDS-01		M10x1	-	46	29	5	12	12
	RK-BFDS-02		3/8"-24	-	46	29	5	12	12
<b>BANJO bolt</b>   Harley D.	RK-BFDH-0	anodized aluminium	7/16"-24	18	33	23	10	-	12
<b>Socket</b> 	RK-CTFA-001N	chromium plated steel	3/8"-32	-	14	-	-	-	11
	RK-CTF-001	anodized aluminium	3/8"-32	-	14	-	-	-	12
<b>Locknut</b> 	RK-DB-1615N	chromium plated steel	M16x1.5	-	4	-	-	-	19
	RK-DB-100N		M10x1.25	-	5	-	-	-	15
	RK-DB-101N		M10x1	-	5	-	-	-	15
	RK-DB-102N		3/8"-24	-	5	-	-	-	15

# INDUSTRIAL HOSES - brake

## Fittings for PTFE brake hoses DN3 - assembly parts

description	code	material	D [mm]	D1 [mm]	D2 [mm]	S [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]
Biconic for fitting with female thread 	RK-BIC-001	brass	8	-	-	-	7.5	-	-	-
Bicone 	RK-BIC-000	rubber	8	-	-	-	7.5	-	-	-
Washer 	RK-RA-0100	anodized aluminium	10.2	13.5	-	1	-	-	-	-
	RK-RA-0120		10.2	15.5	-	1	-	-	-	-
Fairlead 	RK-PTG-10	rubber	10	8	-	-	40	-	-	-
Fairlead 	RK-FTC-01	rubber	6.5	15	21	-	10	-	-	-
	RK-FTC-02		8	15	21	-	10	-	-	-
	RK-FTC-03		8	15	16	-	14	-	-	-
Cushioned tube clamps 	RK-FZG-20	zinc-plated steel / rubber	9	6.5	18	-	15	20	30	22
Clamping ring 	RK-OG-0600	brass	7.5	-	-	-	6	-	-	-



### Flexible connectors

Hoses designed for water, air, oil and fuel installations and Turbo systems. Mainly used to supply air or fluids to tanks, overflow tanks, venting systems, in engine chambers of buses and construction equipment. The connectors are usually made of: silicone (FMVQ, MVQ), EPDM, NBR, PVC/NBR, CR, AEM (ethylene acrylic rubber). They are reinforced with aramid fibre, polyester fibre or Nomex.



# INDUSTRIAL HOSES - for automotive industry

## Connectors (AUTOMOTIVE)



**Material:** Silicone rubber  
**Reinforcement:** Textile braids (polyester as a standard, Nomex® or fibre glass optionally)  
**Working temp.:** From -50°C up to +170°C (polyester)  
 From -50°C up to +250°C (Nomex®)  
 From -50°C up to +330°C (fibre glass)

Silicone hoses and hose connectors designed for cooling or heating systems in vehicles (water, cooling liquids, air or air with oil mist). Hardness (standard version) about 65° Shore (A), density about 1.26 g/cm³. External layer in blue as a standard (red and black are also available). Hoses meet the requirements of SAE J20R1 (SAE J20R2 - with steel wire helix). Because of a steel wire helix, SUPER FLEX hoses are resistant to kinking and vacuum. External layer is smooth for diameters up to 28 mm, and rectangularly corrugated for diameters above 28mm. Safety factor 3:1

Hose with polyester braid reinforcement, L 1000 mm\*



**HJ**

code	I.D. [mm]	wall thickness [mm]	working pressure [mm]
VP-ML-006	6	4	14.4
VP-ML-008	8	4	12.9
VP-ML-010	10	4	11.5
VP-ML-013	13	4	9.8
VP-ML-016	16	4	8
VP-ML-019	19	4	6.9
VP-ML-022	22	4	8.6
VP-ML-025	25	4	6.9
VP-ML-028	28	4	6.9
VP-ML-032	32	4	6.9
VP-ML-035	35	4	4.6
VP-ML-038	38	4	4.6
VP-ML-041	41	4	5.2
VP-ML-044	44	4	5.2
VP-ML-051	51	4	5.1
VP-ML-054	54	5	6.3
VP-ML-057	57	5	5.2
VP-ML-060	60	5	5.7
VP-ML-063	63	5	5.5
VP-ML-070	70	5	4.6
VP-ML-076	76	5	4
VP-ML-080	80	5	4
VP-ML-083	83	5	4
VP-ML-089	89	5	3.4
VP-ML-095	95	5	3.2
VP-ML-102	102	6	3.4
VP-ML-127	127	6	2
VP-ML-152	152	6	1.6

SUPER FLEX - polyester braid and wire helix. L 1000 mm\*



**CH**

code	I.D. [mm]	wall thickness [mm]	working pressure [mm]
VP-CH-013	13	4	9.8
VP-CH-016	16	5	8
VP-CH-019	19	5	6.9
VP-CH-022	22	5	8.6
VP-CH-025	25	5	6.9
VP-CH-028	28	4	6.9
VP-CH-032	32	5	6.9
VP-CH-035	35	4	4.6
VP-CH-038	38	4	4.6
VP-CH-051	51	5	5.1
VP-CH-063	63	6	5.5

\* - also available in lengths of 2000, 3000, 4000 mm



Assembling clamps: see chapter „INDUSTRIAL FITTINGS - clips, clamps, ferrules”

# INDUSTRIAL HOSES - for automotive industry

## Connectors (AUTOMOTIVE)

Elbow with polyester braid reinforcement. length arms 102 mm



**E90**



**E45**

code (90° elbow)	code (45° elbow)	I.D. [mm]	wall thickness [mm]	working pressure [mm]
VP-E90-008	VP-E45-008	8	4	12.9
VP-E90-010	VP-E45-010	10	4	10.9
VP-E90-013	VP-E45-013	13	4	8
VP-E90-016	VP-E45-016	16	4	6.9
VP-E90-019	VP-E45-019	19	4	6.3
VP-E90-022	VP-E45-022	22	4	8
VP-E90-025	VP-E45-025	25	4	6.3
VP-E90-028	VP-E45-028	28	4	5.2
VP-E90-032	VP-E45-032	32	4	6.1
VP-E90-035	VP-E45-035	35	4	4.6
VP-E90-038	VP-E45-038	38	4	4.9
VP-E90-044	VP-E45-044	44	4	4.6
VP-E90-051	VP-E45-051	51	5	5.2
VP-E90-054	VP-E45-054	54	5	5.2
VP-E90-057	VP-E45-057	57	5	5.2
VP-E90-060	VP-E45-060	60	5	5.7
VP-E90-063	VP-E45-063	63	5	5.5
VP-E90-070	VP-E45-070	70	5	4.6
VP-E90-076	VP-E45-076	76	5	4
VP-E90-080	VP-E45-080	80	5	4
VP-E90-083	VP-E45-083	83	5	4
VP-E90-089*	VP-E45-089*	89	5	3.4
VP-E90-102*	VP-E45-102*	102	6	3

\* - length arms 125 mm

Aluminium hose joiner



**HJ**

code	I.D. [mm]	wall thickness [mm]	length [mm]
VP-HJ-016-100	16	1.4	100
VP-HJ-019-100	19	1.25	100
VP-HJ-022-100	22	2	100
VP-HJ-025-100	25	2	100
VP-HJ-028-100	28	1.8	100
VP-HJ-032-100	32	1.5	100
VP-HJ-035-100	35	2	100
VP-HJ-038-100	38	1.6	100
VP-HJ-051-100	51	1.6	100
VP-HJ-057-100	57	1.6	100
VP-HJ-060-100	60	1.6	100
VP-HJ-063-100	63	1.6	100
VP-HJ-070-100	70	1.6	100
VP-HJ-076-100	76	1.6	100
VP-HJ-080-100	80	1.6	100
VP-HJ-089-100	89	2	100
VP-HJ-102-100	102	2	100

Straight reducer with polyester braid. length arms 102 mm



**SR**

code	I.D. [mm]	wall thickness [mm]	working pressure [mm]
VP-SR-019-013	19 x 13	4	6.9
VP-SR-019-016	19 x 16	4	6.9
VP-SR-022-016	22 x 16	4	8.6
VP-SR-025-016	25 x 16	4	6.9
VP-SR-025-019	25 x 19	4	6.9
VP-SR-032-019	32 x 19	4	6.9
VP-SR-032-025	32 x 25	4	6.9
VP-SR-035-025	35 x 25	4	6.3
VP-SR-038-025	38 x 25	4	4.6
VP-SR-038-032	38 x 32	4	4.6
VP-SR-038-035	38 x 35	4	4.6
VP-SR-051-038	51 x 38	5	5.1
VP-SR-051-044	51 x 44	5	5.1
VP-SR-054-051	54 x 51	5	5.1
VP-SR-057-051	57 x 51	5	5.1
VP-SR-057-054	57 x 54	5	5.1
VP-SR-060-051	60 x 51	5	5.8
VP-SR-063-051	63 x 51	5	5.5
VP-SR-063-060	63 x 60	5	5.5
VP-SR-070-051	70 x 51	5	4.6
VP-SR-070-060	70 x 60	5	4.6
VP-SR-070-063	70 x 63	5	4.6
VP-SR-076-051	76 x 51	5	4
VP-SR-076-060	76 x 60	5	4
VP-SR-076-063	76 x 63	5	4
VP-SR-076-070	76 x 70	5	4
VP-SR-080-070	80 x 70	5	4
VP-SR-080-076	80 x 76	5	4
VP-SR-083-076	83 x 76	5	4
VP-SR-089-070	89 x 70	5	3.4
VP-SR-089-076	89 x 76	5	3.4
VP-SR-102-076	102 x 76	5	3
VP-SR-102-089	102 x 89	5	3

Hump hose with polyester braid. length arms 100 mm



**HH**

code	I.D. [mm]	wall thickness [mm]	working pressure [mm]
VP-HH-051	51	5	5.1
VP-HH-060	60	5	5.7
VP-HH-063	63	5	5.5
VP-HH-070	70	5	4.6
VP-HH-076	76	5	4
VP-HH-080	80	5	4
VP-HH-089	89	5	3.4
VP-HH-102	102	5	3.4

# INDUSTRIAL HOSES - for automotive industry

## Connectors (AUTOMOTIVE)

Elbow with polyester braid reinforcement. length arms 102 mm



**E120**



**E135**

code (120° elbow)	code (135° elbow)	I.D. [mm]	wall thickness [mm]	working pressure [mm]
-	VP-E135-008	8	4	12.9
-	VP-E135-010	10	4	10.9
-	VP-E135-013	13	4	8
-	VP-E135-016	16	4	6.9
VP-E120-019	VP-E135-019	19	4	6.3
-	VP-E135-022	22	4	8
VP-E120-025	VP-E135-025	25	4	6.3
-	VP-E135-028	28	4	5.2
VP-E120-032	VP-E135-032	32	4	5.7
VP-E120-035	VP-E135-035	35	4	6.1
VP-E120-038	VP-E135-038	38	4	4.6
-	VP-E135-044	44	4	4.9
VP-E120-051	VP-E135-051	51	5	5.1
-	VP-E135-054	54	5	4.6
-	VP-E135-057	57	5	4.7
VP-E120-060	VP-E135-060	60	5	5.2
VP-E120-063	VP-E135-063	63	5	5.2
VP-E120-070	VP-E135-070	70	5	5.7
VP-E120-076	VP-E135-076	76	5	5.5
VP-E120-102*	-	102	6	3

\* - length arms 125 mm

Elbow with polyester braid reinforcement. length arms 102 mm



**E180**

code	I.D. [mm]	wall thickness [mm]	working pressure [mm]
VP-E180-008	8	4	12.9
VP-E180-010	10	4	10.9
VP-E180-013	13	4	8
VP-E180-016	16	4	6.9
VP-E180-019	19	4	6.3
VP-E180-025	25	4	6.3
VP-E180-032	32	4	6.1
VP-E180-035	35	4	4.6
VP-E180-038	38	4	4.9
VP-E180-051	51	5	5.2
VP-E180-063	63	5	5.2
VP-E180-076	76	5	4

Elbow reducer with polyester braid. length arms 102 mm



**ER**

code	I.D. [mm]	wall thickness [mm]	working pressure [mm]
VP-ER-019-013	19 x 13	4	6.3
VP-ER-019-016	19 x 16	4	6.3
VP-ER-022-016	22 x 16	4	8
VP-ER-022-019	22 x 19	4	8
VP-ER-025-019	25 x 19	4	6.3
VP-ER-032-019	32 x 19	4	5.2
VP-ER-032-025	32 x 25	4	6.1
VP-ER-035-022	35 x 22	4	5.2
VP-ER-035-025	35 x 25	4	4.6
VP-ER-035-032	35 x 32	4	4.6
VP-ER-038-025	38 x 25	4	4.9
VP-ER-038-032	38 x 32	4	4.9
VP-ER-038-035	38 x 35	4	4.9
VP-ER-051-044	51 x 44	5	5.2
VP-ER-057-054	57 x 54	5	5.1
VP-ER-060-051	60 x 51	5	5.1
VP-ER-063-051	63 x 51	5	5.1
VP-ER-063-054	63 x 54	5	5.1
VP-ER-063-057	63 x 57	5	5.1
VP-ER-070-051	70 x 51	5	4.6
VP-ER-070-060	70 x 60	5	4.6
VP-ER-070-063	70 x 63	5	4.6
VP-ER-076-051	76 x 51	5	4
VP-ER-076-060	76 x 60	5	4
VP-ER-076-063	76 x 63	5	4
VP-ER-076-070	76 x 70	5	4
VP-ER-089-076	89 x 76	5	3.4
VP-ER-102-076	102 x 76	6	3
VP-ER-102-089	102 x 89	6	3

Hump hose with Nomex braid reinforcement



**BH**

code	I.D. [mm]	wall thickness [mm]	length [mm]
VP-BH-051	51	5	150
VP-BH-060	60	5	150
VP-BH-063	63	5	150
VP-BH-070	70	5	150
VP-BH-076	76	5	150
VP-BH-080	80	5	150
VP-BH-089	89	5	150
VP-BH-102	102	5	150
VP-BH-127	127	5	150
VP-BH-152	152	5	150

# INDUSTRIAL HOSES - for automotive industry

## Hoses



### AUTO SILCAR RED®

**Internal layer:** Red silicone  
**Reinforcement:** Synthetic braid  
**External layer:** Red silicone  
**Working temp.:** From -50°C up to +180°C  
 (with peaks up to +200°C)

Delivery hose designed to transfer hot air or hot water mixed with anti-freeze liquids. Widely used in cooling systems of vehicles where resistance to high temperature and oil are required.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	standard length [m]
IV-SILCAR-015	15	22	3	9	40
IV-SILCAR-022	22	29	3	9	40
IV-SILCAR-025	25	32	3	9	40
IV-SILCAR-028	28	35	3	9	40
IV-SILCAR-032	32	39	3	9	40
IV-SILCAR-038	38	45	3	9	40
IV-SILCAR-051	51	58	3	9	40
IV-SILCAR-055	55	64	3	9	40
IV-SILCAR-105	105	114	3	9	10
IV-SILCAR-110	110	121	3	9	10
IV-SILCAR-305	305	319	3	9	10
IV-SILCAR-320	320	337	3	9	10



### AUTO SILCAR RED / LL®

**Internal layer:** Red silicone  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Red silicone  
**Working temp.:** From -50°C up to +180°C  
 (with peaks up to +200°C)

Delivery hose designed to transfer hot air or hot water mixed with anti-freeze liquids. Widely used in cooling systems of vehicles where resistance to high temperature and oil are required.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	vacuum [bar]	bending radius [mm]	standard length [m]
IV-SILCAR-LL-013	13	23.5	3	9	0.9	80	40
IV-SILCAR-LL-025	25	35.5	3	9	0.9	150	40
IV-SILCAR-LL-038	38	48.5	3	9	0.9	230	40
IV-SILCAR-LL-051	51	61.5	3	9	0.9	300	40

## INDUSTRIAL HOSES - for automotive industry

### Hoses



#### AUTO SILCAR RED / LO®

**Internal layer:** Red silicone  
**Reinforcement:** Synthetic braid, steel wire helix  
**External layer:** Red, corrugated silicone  
**Working temp.:** From -50°C up to +180°C  
(with peaks up to +200°C)

Suction-delivery hose designed to transfer hot air or hot water mixed with anti-freeze liquids. Widely used in cooling systems of vehicles where resistance to high temperature and oil are required.

code	I.D. [mm]	working pressure [bar]	bursting pressure [bar]	standard length [m]
IV-SILCAR-LO-030	30	3	9	40
IV-SILCAR-LO-040	40	3	9	40
IV-SILCAR-LO-051	51	3	9	40
IV-SILCAR-LO-063	63.5	3	9	10
IV-SILCAR-LO-076	76	3	9	10
IV-SILCAR-LO-100	100	3	9	10
IV-SILCAR-LO-110	110	3	9	10
IV-SILCAR-LO-305	305	3	9	10

# INDUSTRIAL HOSES - for automotive industry

## Hoses



### TUBANO

**Material:** Moulded EPDM rubber  
**Working temp:** From -40°C up to +125°C

Hose used for cooling and heating installations, water, some acids and diluted alkalis. Resistant to high temperatures and ozone but with limited chemical resistance. Supplied in 1 m pieces to enable easy cutting and fitting into an installation.

code	I.D. [mm]	extensibility [mm]	working pressure [bar]	bending radius [mm]	standard length [m]
EC-102100	20	20 ÷ 25	1.5	70	1
EC-102101	25	25 ÷ 31	1.5	85	1
EC-102102	31.5	31.5 ÷ 36	1.5	105	1
EC-102103	33.5	33.5 ÷ 38	1.5	110	1
EC-102104	37	37 ÷ 44	1.5	115	1
EC-102105	44	44 ÷ 48	1.5	120	1
EC-102106	48	48 ÷ 55	1.5	125	1
EC-102107	55	55 ÷ 65	1.5	130	1
EC-102108	65	65 ÷ 75	1.5	140	1
EC-102109	80	80 ÷ 90	1.5	150	1



### TUBANO OIL

**Internal layer:** Moulded EPDM rubber  
**External layer:** Oil resistant synthetic rubber  
**Working temp.:** From -40°C up to +125°C

Hose used for cooling and heating installations, water, some acids and diluted alkalis. Resistant to high temperatures and ozone but with limited chemical resistance. Supplied in 1 m pieces to enable easy cutting and fitting into an installation.

code	I.D. [mm]	extensibility [mm]	working pressure [bar]	bending radius [mm]	standard length [m]
EC-102111	20	20 ÷ 25	1.5	70	1
EC-102112	25	25 ÷ 31	1.5	85	1
EC-102113	31.5	31.5 ÷ 36	1.5	105	1
EC-102114	33.5	33.5 ÷ 38	1.5	110	1
EC-102115	37	37 ÷ 44	1.5	115	1
EC-102116	44	44 ÷ 48	1.5	120	1
EC-102117	48	48 ÷ 55	1.5	125	1
EC-102118	55	55 ÷ 65	1.5	130	1
EC-102119	65	65 ÷ 75	1.5	140	1

## INDUSTRIAL HOSES - compensators

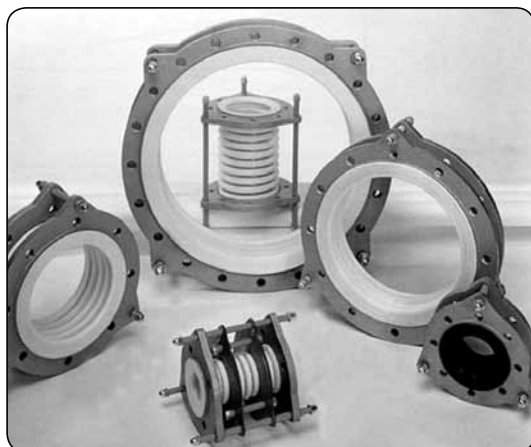
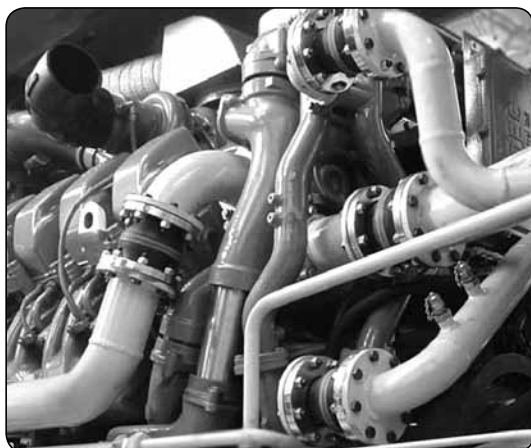
In any pipeline exposed to temperature variations, vibrations, assembly stress, external impact and deformations, it is necessary to insert flexible parts such as hoses or expansion joints (compensators) in order to absorb movements of an installation. Bellow expansion joints can be installed in steam, water, gas, air, oil, chemicals, food and dry products pipelines.

Expansion joints are usually used to:

- accommodate thermal expansion of the pipeline,
- reduce stress in the pipeline,
- absorb vibrations and dampen noise,
- facilitate pipeline installation and assembly of couplings and valves.

Compensators are usually classified according to the kind of material the bellow (the basic part of all expansion joints with bellows) is made of:

- rubber expansion joints: the bellow is made of rubber reinforced with synthetic or steel cord (the kind of rubber depends on the working conditions of the compensator, medium, temperature, etc.), working temperature usually ranges up to +90°C (optionally up to +130°C),
- steel expansion joints: the bellow is made of AISI 321 acid resistant steel, steel compensators resistant to high temperature, corrosion and aggressive chemicals. Characterized by good mechanical characteristics and high fatigue strength.
- PTFE expansion joints: the bellow is made of annularly corrugated, thick-walled PTFE tube. They make a group of flexible joints with the highest grade of chemical resistance.
- fabric expansion joints made of fibreglass fabric optionally coated with silicone or PTFE layer. High chemical and temperature resistance. Designed to transfer exhaust fumes, gases, dust, and other fumes.





# INDUSTRIAL HOSES - compensators

## Rubber compensators

### Working parameters of rubber expansion joints

The working parameters of rubber compensators given in the tables (working pressure, working temperature and displacement) are the maximum values and they must not occur simultaneously. The working pressure applies to the expansion joint working in the temperature of up to +50°C. At elevated temperatures, it is required to reduce the values given in the table regarding the maximum working pressure and displacement. The values of permissible vacuum pressure given in the tables apply to the compensators without vacuum supporting rings. A stainless steel ring can be fitted in the bellow of the rubber expansion joint if it is necessary. In that case the compensator can operate in the conditions of vacuum pressure or even close to full vacuum. Please contact Sales or Technical Department in the event of any doubts concerning permissible working parameters of the expansion joints in particular application.

compensator type	working temperature	displacement	bellow maximum working pressure [bar]		
			PN10	PN16	PN25
E-RE, E-CR, E-GR, E-YE, E-YL, E Viton, E-WH, E-BR	+50°C	100%	10	16	-
	+70°C	80%	8	12	-
	+100°C	60%	6	10	-
E-LPG	+50°C	100%	-	-	25
	+70°C	80%	-	-	20
	+100°C	60%	-	-	15
E-RP	+50°C	100%	10	-	-
	+70°C	80%	8	-	-
	+100°C	60%	6	-	-
E-RX	+70°C	100%	10	16	-
	+100°C	75%	7.5	12	-
	+130°C	50%	5	8	-
E-YS	+60°C	100%	10	16	-
	+100°C	60%	6	10	-
115 EPDM, 115 NBR	+50°C	100%	10	16	-
	+70°C	80%	8	12	-
	+90°C	60%	6	10	-
T-EPDM, T-NBR, 1504	+40°C	100%	10	16	-
	+60°C	100%	6	10	-
	+80°C	80%	4	6.5	-
	+100°C	60%	2.5	4	-

### Installation of rubber compensators

Rubber expansion joints are supplied as ready-to-use solutions. The compensators should not be covered and be accessible to regular maintenance. Rubber parts must not be covered with paint. During any welding work the bellow has to be covered up to protect it against high temperature and sparks. Permissible displacement, temperature, pressure and quality of rubber should be examined before installation. The pipes should be fixed to a base to eliminate any forces resulting from internal pipe pressure. To utilize the permissible displacement the distance between two pipe anchor points should be the same as the length of the compensator.

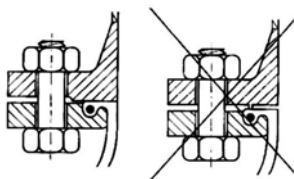


fig. 1

fig. 2

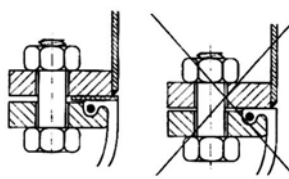


fig. 3

fig. 4

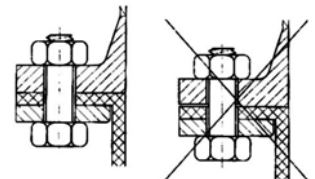


fig. 5

fig. 6

## Rubber compensators

Joining screws should be fixed with their heads facing rubber bellow to allow displacements given in technical specifications. If it is not possible, threaded screws should not protrude more than  $2 \div 3$  mm, to avoid damage of the bellow. Nuts should be tightened up one after another diagonally during mounting and again after installation start-up. If the screws and nuts are tightened up too hard, the seal can be crushed.

For safety reasons as well as to ensure the longest service life of an expansion joint, counter flanges have to be mounted properly (fig. 1 ÷ 6).

The seal of a counter flange has to be smooth and cover most of rubber surface (at least 60%) so as to provide right sealing (fig. 1). The compensators with full rubber flanges demand full and perfectly smooth counter flanges (fig. 5).

- fig. 1 - flange with smooth seal,
- fig. 2 - grooved and recess flanges must not be used, they damage rubber,
- fig. 3 - flange with plane seal in order to protect rubber surface,
- fig. 4 - sharp edges of the pipe can damage rubber surface,
- fig. 5 - full rubber flanges require full counter flanges to obtain proper sealing,
- fig. 6 - counter flange with a pad can both damage rubber surface and prevent tight contact.

Never cover rubber parts of a compensator with any paint or lubricant.

During any welding work the bellow has to be covered up to protect it against high temperature and spatter.

Before installation:

- remove dust and any foreign material that entered a compensator,
- a compensator should be secured against accidental or deliberate damage,
- any oil or lubricant must not fall on a compensator.

During start-up:

- check, if there is any leakage,
- if there is a need, check expansion limiters.

During service:

- a compensator must be easily accessible, not covered with any insulating material or paint,
- as soon as compensators start to work, it is essential to be sure its movements do not exceed permissible limits.

Maintenance:

- any kind of changes in the outer layer may indicate serious deformation,
- check screws tightening,
- check the range of compensator movements, that should be within permissible limits.

### NOTE!

- the working parameters of compensators listed in the tables are the maximum values and must not occur simultaneously,
- working pressure applies to the compensator operating in the temperature of  $+20^{\circ}\text{C}$ ,
- the values of permissible vacuum pressure given in the tables apply to the rubber compensators without vacuum supporting rings. A stainless steel ring can be fitted in the bellow of the rubber compensator if it is necessary. In that case the expansion joint can operate in the conditions of vacuum pressure or even close to full vacuum.
- the permissible displacement values given in the tables apply to the compensators operating in the temperature of up to  $+50^{\circ}\text{C}$ .

# INDUSTRIAL HOSES - compensators

## Rubber compensators



### T - EPDM

**Internal layer:** EPDM rubber  
**Reinforcement:** Nylon cord  
**External layer:** EPDM rubber  
**Flanges:** Galvanized carbon steel  
**Working temp.:** Up to +100°C  
 (depending on the medium)

Designed for installations transferring hot and cold water, cooling water with water treatment additives, drinking water, industrial water, chlorine solutions, glycols, acids, whitewash, esters, ketones, seawater. Not suitable for fluids with oil content. PZH (National Institute of Hygiene, Poland) certificate for contact with drinking water.

code	I.D. [mm]	DIN 2501 flange PN	length [mm]	axial movement [± mm]	lateral movement [mm]	angular movement [degrees]	working pressure [bar]
TG-T-EPDM-032	32	10/16	95	4/8	8	15	16
TG-T-EPDM-040	40	10/16	95	4/8	8	15	16
TG-T-EPDM-050	50	10/16	105	4/8	8	15	16
TG-T-EPDM-065	65	10/16	115	6/12	10	15	16
TG-T-EPDM-080	80	10/16	130	6/12	10	15	16
TG-T-EPDM-100	100	10/16	135	10/18	12	15	16
TG-T-EPDM-125	125	10/16	170	10/18	12	15	16
TG-T-EPDM-150	150	10/16	180	10/18	12	15	16
TG-T-EPDM-200	200	10	205	14/20	18	15	10
TG-T-EPDM-250	250	10	240	14/22	18	15	10
TG-T-EPDM-300	300	10	260	14/24	18	15	10
TG-T-EPDM-350	350	10	265	16/25	18	15	10
TG-T-EPDM-400	400	10	265	16/25	18	15	10
TG-T-EPDM-450	450	10	200	16/20	18	15	10
TG-T-EPDM-500	500	10	200	16/20	18	15	10
TG-T-EPDM-600	600	10	250	16/20	18	15	10



### T - NBR

**Internal layer:** NBR rubber  
**Reinforcement:** Nylon cord  
**External layer:** NBR rubber  
**Flanges:** Galvanized carbon steel  
**Working temp.:** Up to +80°C  
 (depending on the medium)

Designed for installations transferring mineral oils, vegetable or animal fats, aerosol oils, water with anti-corrosion additives.

code	I.D. [mm]	DIN 2501 flange PN	length [mm]	axial movement [± mm]	lateral movement [mm]	angular movement [degrees]	working pressure [bar]
TG-T-NBR-032	32	10/16	95	4/8	8	15	16
TG-T-NBR-040	40	10/16	95	4/8	8	15	16
TG-T-NBR-050	50	10/16	105	4/8	8	15	16
TG-T-NBR-065	65	10/16	115	6/12	10	15	16
TG-T-NBR-080	80	10/16	130	6/12	10	15	16
TG-T-NBR-100	100	10/16	135	10/18	12	15	16
TG-T-NBR-125	125	10/16	170	10/18	12	15	16
TG-T-NBR-150	150	10/16	180	10/18	12	15	16
TG-T-NBR-200	200	10	205	14/20	18	15	10

## INDUSTRIAL HOSES - compensators



### 115 EPDM

**Internal layer:** EPDM rubber  
**Reinforcement:** Nylon cord  
**External layer:** EPDM rubber  
**Flanges:** Galvanized carbon steel  
**Working temp.:** From -30°C up to +90°C  
 (depending on the medium)

Designed for installations transferring hot and cold water, water with water treatment additives, industrial water, seawater, glycols, weak acids, bases, esters and ketones. Not suitable for fluids with oil content. BV (Bureau Veritas) Certificate.

code	I.D. [mm]	DIN 2501 flange PN	length [mm]	axial movement [± mm]	lateral movement [mm]	angular movement [degrees]	working pressure [bar]	vacuum [bar]
TG-115E-032	32	10/16	130	12/20	14	15	16	0.88
TG-115E-040	40	10/16	130	12/20	14	15	16	0.88
TG-115E-050	50	10/16	130	12/20	14	15	16	0.88
TG-115E-065	65	10/16	130	12/20	14	15	16	0.88
TG-115E-080	80	10/16	130	12/20	14	15	16	0.88
TG-115E-100	100	10/16	130	12/20	14	15	16	0.88
TG-115E-125	125	10/16	130	12/20	14	15	16	0.88
TG-115E-150	150	10/16	130	12/20	14	15	16	0.88
TG-115E-200	200	10	130	12/25	14	15	10	0.88
TG-115E-250	250	10	130	16/25	22	15	10	0.88
TG-115E-300	300	10	130	16/25	22	15	10	0.88
TG-101E-350	350	10	200	16/25	22	15	10	0.88
TG-101E-400	400	10	200	16/25	22	15	10	0.88
TG-101E-450	450	10	200	16/25	22	15	10	0.88
TG-101E-500	500	10	200	16/25	22	15	10	0.88
TG-100E-600	600	10	265	16/25	22	15	10	0.88



### 115 NBR

**Internal layer:** NBR rubber  
**Reinforcement:** Nylon cord  
**External layer:** CR rubber  
**Flanges:** Galvanized carbon steel  
**Working temp.:** From -30°C up to +90°C  
 (depending on the medium)

Designed for installations transferring mineral oils, vegetable or animal fats, aerosol oils, water with anti-corrosion additives.

code	I.D. [mm]	DIN 2501 flange PN	length [mm]	axial movement [± mm]	lateral movement [mm]	angular movement [degrees]	working pressure [bar]	vacuum [bar]
TG-115N-032	32	10/16	130	12/20	14	15	16	0.88
TG-115N-040	40	10/16	130	12/20	14	15	16	0.88
TG-115N-050	50	10/16	130	12/20	14	15	16	0.88
TG-115N-065	65	10/16	130	12/20	14	15	16	0.88
TG-115N-080	80	10/16	130	12/20	14	15	16	0.88
TG-115N-100	100	10/16	130	12/20	14	15	16	0.88
TG-115N-125	125	10/16	130	12/20	14	15	16	0.88
TG-115N-150	150	10/16	130	12/20	14	15	16	0.88
TG-115N-200	200	10	130	12/25	14	15	10	0.88
TG-115N-250	250	10	130	16/25	22	15	10	0.88
TG-115N-300	300	10	130	16/25	22	15	10	0.88

# INDUSTRIAL HOSES - compensators

## Rubber compensators



### 1504

**Internal layer:** EPDM rubber  
**Reinforcement:** Nylon cord  
**External layer:** EPDM rubber  
**Connections:** BSP male thread, cast iron, zinc-plated  
**Working temp.:** From -10°C up to +100°C  
 (depending on the medium)

Designed to absorb vibration and linear or angular displacement in water installation. Not suitable for fluids with oil content. PZH (National Institute of Hygiene, Poland) certificate for contact with drinking water.

code	nominal diameter [mm]	thread size [inch]	length [mm]	compression [mm]	expansion [mm]	lateral movement [mm]	angular movement [degrees]	working pressure [bar]
TG-1504-E-15	15	1/2	200	22	6	22	45	10
TG-1504-E-20	20	3/4	200	22	6	22	45	10
TG-1504-E-25	25	1	200	22	6	22	45	10
TG-1504-E-32	32	1.1/4	200	22	6	22	45	10
TG-1504-E-38	38	1.1/2	200	22	6	22	45	10
TG-1504-E-50	50	2	200	22	6	22	45	10
TG-1504-E-65	65	2.1/2	220	22	6	22	45	10
TG-1504-E-75	75	3	220	22	6	22	45	10



### E - RP

**Internal layer:** Butyl rubber (IIR) / EPDM  
**Reinforcement:** Nylon cord  
**External layer:** EPDM rubber  
**Flanges:** Galvanized carbon steel  
**Working temp.:** From -40°C up to +90°C  
 (with peaks up to +120°C depending on the medium)

Intended for sanitary installations, cold or hot water, swimming pool water, seawater and drinking water. Not suitable for mineral oils, cooling water with oil-based anti-corrosion additives, oily air and any installation where the constant working pressure exceeds 10 bar. Marked with a single red dot on a bellows.

code	I.D. [mm]	DIN 2501 flange PN	length [mm]	axial movement [± mm]	lateral movement [± mm]	angular movement [± degrees]	working pressure [bar]	vacuum [bar]
TG-E-RP-025	25	10	130	20/30	30	30	10	0.3
TG-E-RP-032	32	10	130	20/30	30	30	10	0.3
TG-E-RP-040	40	10	130	20/30	30	30	10	0.3
TG-E-RP-050	50	10	130	20/30	30	30	10	0.3
TG-E-RP-065	65	10	130	20/30	30	30	10	0.3
TG-E-RP-080	80	10	130	20/30	30	30	10	0.2
TG-E-RP-100	100	10	130	20/30	30	20	10	0.2
TG-E-RP-125	125	10	130	20/30	30	20	10	0.2
TG-E-RP-150	150	10	130	20/30	30	20	10	0.1

# INDUSTRIAL HOSES - compensators

## Rubber compensators



### E - CR

**Internal layer:** CR rubber  
**Reinforcement:** Nylon cord  
**External layer:** CR rubber  
**Flanges:** Galvanized carbon steel  
**Working temp.:** From -25°C up to +90°C  
 (with peaks up to +100°C depending on the medium)

Designed for installations transferring hot and cold water (not drinking water), seawater, cooling water with water treatment additives, municipal sewage, oily water, compressed air (not hot). Not suitable for heating oil, diesel, petrol or other petrochemical products, acids and bases. Marked with CR letters on a bellow, no stripe.

code	I.D. [mm]	DIN 2501 flange PN	length [mm]	axial movement [± mm]	lateral movement [± mm]	angular movement [± degrees]	working pressure [bar]	vacuum [bar]
TG-E-CR-025	25	16	130	20/30	30	30	16	1
TG-E-CR-032	32	16	130	20/30	30	30	16	1
TG-E-CR-040	40	16	130	20/30	30	30	16	1
TG-E-CR-050	50	16	130	20/30	30	30	16	1
TG-E-CR-065	65	16	130	20/30	30	30	16	0.7
TG-E-CR-080	80	16	130	20/30	30	30	16	0.6
TG-E-CR-100	100	16	130	20/30	30	20	16	0.4
TG-E-CR-125	125	16	130	20/30	30	20	16	0.3
TG-E-CR-150	150	16	130	20/30	30	20	16	0.3
TG-E-CR-200	200	10	130	30/25	30	10	10	0.3
TG-E-CR-250	250	10	130	30/10	15	5	10	0.2
TG-E-CR-300	300	10	130	30/10	15	5	10	0.1



### E - RE

**Internal layer:** Butyl rubber (IIR) / EPDM  
**Reinforcement:** Nylon cord  
**External layer:** EPDM rubber  
**Flanges:** Galvanized carbon steel  
**Working temp.:** From -40°C up to +100°C  
 (with peaks up to +120°C depending on the medium)

Designed for installations transferring water, seawater, cooling water with water treatment additives, drinking water, low concentration acids and bases, solutions of salts, esters and ketones. Not suitable for mineral oils, cooling water with oil-based anti-corrosion additives, oily air. Marked with a single red stripe on a bellow.

code	I.D. [mm]	DIN 2501 flange PN	length [mm]	axial movement [± mm]	lateral movement [± mm]	angular movement [± degrees]	working pressure [bar]	vacuum [bar]
TG-E-RE-025	25	16	130	20/30	30	30	16	1
TG-E-RE-032	32	16	130	20/30	30	30	16	1
TG-E-RE-040	40	16	130	20/30	30	30	16	1
TG-E-RE-050	50	16	130	20/30	30	30	16	1
TG-E-RE-065	65	16	130	20/30	30	30	16	0.7
TG-E-RE-080	80	16	130	20/30	30	30	16	0.6
TG-E-RE-100	100	16	130	20/30	30	20	16	0.4
TG-E-RE-125	125	16	130	20/30	30	20	16	0.3
TG-E-RE-150	150	16	130	20/30	30	20	16	0.3
TG-E-RE-200	200	10	130	30/25	30	10	10	0.3
TG-E-RE-250	250	10	130	30/10	15	5	10	0.2
TG-E-RE-300	300	10	130	30/10	15	5	10	0.1

# INDUSTRIAL HOSES - compensators

## Rubber compensators



### E - YE

**Internal layer:** NBR rubber  
**Reinforcement:** Nylon cord  
**External layer:** CR rubber  
**Flanges:** Galvanized carbon steel  
**Working temp.:** From -20°C up to +90°C  
 (with peaks up to +100°C depending on the medium)

Designed for installations conveying petrochemical products with aromatic content up to 50%, oily air, natural gas (not LPG), oily water, cooling water with anti-corrosion additives. Marked with a single yellow stripe on a bellow.

code	I.D. [mm]	DIN 2501 flange PN	length [mm]	axial movement [± mm]	lateral movement [± mm]	angular movement [± degrees]	working pressure [bar]	vacuum [bar]
TG-E-YE-025	25	16	130	20/30	30	30	16	1
TG-E-YE-032	32	16	130	20/30	30	30	16	1
TG-E-YE-040	40	16	130	20/30	30	30	16	1
TG-E-YE-050	50	16	130	20/30	30	30	16	1
TG-E-YE-065	65	16	130	20/30	30	30	16	0.7
TG-E-YE-080	80	16	130	20/30	30	30	16	0.6
TG-E-YE-100	100	16	130	20/30	30	20	16	0.4
TG-E-YE-125	125	16	130	20/30	30	20	16	0.3
TG-E-YE-150	150	16	130	20/30	30	20	16	0.3
TG-E-YE-200	200	10	130	30/25	30	10	10	0.3
TG-E-YE-250	250	10	130	30/10	15	5	10	0.2
TG-E-YE-300	300	10	130	30/10	15	5	10	0.1



### E - YL

**Internal layer:** NBR rubber  
**Reinforcement:** Nylon cord  
**External layer:** CR rubber  
**Flanges:** Galvanized carbon steel  
**Working temp.:** From -40°C up to +90°C  
 (with peaks up to +100°C depending on the medium)

Designed for installations conveying petrochemical products, petrol, diesel, heating oil, JET A1 jet fuel, kerosene. Marked with a single yellow stripe and white LT letters on a bellow.

code	I.D. [mm]	DIN 2501 flange PN	length [mm]	axial movement [± mm]	lateral movement [± mm]	angular movement [± degrees]	working pressure [bar]	vacuum [bar]
TG-E-YL-025	25	16	130	20/30	30	30	16	1
TG-E-YL-032	32	16	130	20/30	30	30	16	1
TG-E-YL-040	40	16	130	20/30	30	30	16	1
TG-E-YL-050	50	16	130	20/30	30	30	16	1
TG-E-YL-065	65	16	130	20/30	30	30	16	0.7
TG-E-YL-080	80	16	130	20/30	30	30	16	0.6
TG-E-YL-100	100	16	130	20/30	30	20	16	0.4
TG-E-YL-125	125	16	130	20/30	30	20	16	0.3
TG-E-YL-150	150	16	130	20/30	30	20	16	0.3
TG-E-YL-200	200	10	130	30/25	30	10	10	0.3
TG-E-YL-250	250	10	130	30/10	15	5	10	0.2
TG-E-YL-300	300	10	130	30/10	15	5	10	0.1

# INDUSTRIAL HOSES - compensators

## Rubber compensators



### E - GR

**Internal layer:** CSM rubber (Hypalon)  
**Reinforcement:** Nylon cord  
**External layer:** CSM rubber (Hypalon)  
**Flanges:** Galvanized carbon steel  
**Working temp.:** From -20°C up to +100°C  
 (with peaks up to +110°C depending on the medium)

Intended for installations conveying chemical or petrochemical products with aromatic content up to 50%, acids, bases, oily air (up to +90°C), natural gas (not LPG), oily water, cooling water with anti-corrosion additives. Marked with a single green stripe on a bellow.

code	I.D. [mm]	DIN 2501 flange PN	length [mm]	axial movement [± mm]	lateral movement [± mm]	angular movement [± degrees]	working pressure [bar]	vacuum [bar]
TG-E-GR-025	25	16	130	20/30	30	30	16	1
TG-E-GR-032	32	16	130	20/30	30	30	16	1
TG-E-GR-040	40	16	130	20/30	30	30	16	1
TG-E-GR-050	50	16	130	20/30	30	30	16	1
TG-E-GR-065	65	16	130	20/30	30	30	16	0.7
TG-E-GR-080	80	16	130	20/30	30	30	16	0.6
TG-E-GR-100	100	16	130	20/30	30	20	16	0.4
TG-E-GR-125	125	16	130	20/30	30	20	16	0.3
TG-E-GR-150	150	16	130	20/30	30	20	16	0.3
TG-E-GR-200	200	10	130	30/25	30	10	10	0.3
TG-E-GR-250	250	10	130	30/10	15	5	10	0.2
TG-E-GR-300	300	10	130	30/10	15	5	10	0.1



### E - WH

**Internal layer:** White NBR rubber  
**Reinforcement:** Nylon cord  
**External layer:** CR rubber  
**Flanges:** Galvanized carbon steel  
**Working temp.:** From -20°C up to +90°C  
 (with peaks up to +100°C depending on the medium)

Intended for installations conveying food products, also oil and fat containing foods. Not suitable for drinking water. Marked with a single white stripe on a bellow.

code	I.D. [mm]	DIN 2501 flange PN	length [mm]	axial movement [± mm]	lateral movement [± mm]	angular movement [± degrees]	working pressure [bar]	vacuum [bar]
TG-E-WH-025	25	16	130	20/30	30	30	16	1
TG-E-WH-032	32	16	130	20/30	30	30	16	1
TG-E-WH-040	40	16	130	20/30	30	30	16	1
TG-E-WH-050	50	16	130	20/30	30	30	16	1
TG-E-WH-065	65	16	130	20/30	30	30	16	0.7
TG-E-WH-080	80	16	130	20/30	30	30	16	0.6
TG-E-WH-100	100	16	130	20/30	30	20	16	0.4
TG-E-WH-125	125	16	130	20/30	30	20	16	0.3
TG-E-WH-150	150	16	130	20/30	30	20	16	0.3
TG-E-WH-200	200	10	130	30/25	30	10	10	0.3
TG-E-WH-250	250	10	130	30/10	15	5	10	0.2
TG-E-WH-300	300	10	130	30/10	15	5	10	0.1



# INDUSTRIAL HOSES - compensators

## Rubber compensators



### E - RX

**Internal layer:** EPDM rubber  
**Reinforcement:** Polymer cord  
**External layer:** EPDM rubber  
**Flanges:** Galvanized carbon steel  
**Working temp.:** From -40°C up to +130°C  
 (with peaks up to +150°C depending on the medium)

Designed for installations conveying hot water, cooling water, hot air. Not suitable for mineral oils, cooling water with oil-based anti-corrosion additives, oily air. Marked with a double red stripe on a bellow.

code	I.D. [mm]	DIN 2501 flange PN	length [mm]	axial movement [± mm]	lateral movement [± mm]	angular movement [± degrees]	working pressure [bar]	vacuum [bar]
TG-E-RX-025	25	16	130	20/30	30	30	16	1
TG-E-RX-032	32	16	130	20/30	30	30	16	1
TG-E-RX-040	40	16	130	20/30	30	30	16	1
TG-E-RX-050	50	16	130	20/30	30	30	16	1
TG-E-RX-065	65	16	130	20/30	30	30	16	0.7
TG-E-RX-080	80	16	130	20/30	30	30	16	0.6
TG-E-RX-100	100	16	130	20/30	30	20	16	0.4
TG-E-RX-125	125	16	130	20/30	30	20	16	0.3
TG-E-RX-150	150	16	130	20/30	30	20	16	0.3
TG-E-RX-200	200	10	130	30/25	30	10	10	0.3
TG-E-RX-250	250	10	130	30/10	15	5	10	0.2
TG-E-RX-300	300	10	130	30/10	15	5	10	0.1



### E - LPG

**Internal layer:** Conductive NBR rubber  
**Reinforcement:** Nylon cord  
**External layer:** Conductive CR rubber  
**Flanges:** Galvanized carbon steel  
**Working temp.:** From -20°C up to +90°C  
 (with peaks up to +100°C depending on the medium)

Designed for application in tankers, fuel installations and petrol stations to transfer LPG (Liquid Petroleum Gas) according to EN 589. Germanisher Lloyd Certificate. Available with ASA 300 flanges. Marked with a single orange stripe on a bellow.

code	I.D. [mm]	DIN 2635 flange PN	length [mm]	axial movement [± mm]	lateral movement [± mm]	angular movement [± degrees]	working pressure [bar]	vacuum [bar]
TG-E-OR-025	25	40	130	30	30	30	25	1
TG-E-OR-032	32	40	130	30	30	30	25	1
TG-E-OR-040	40	40	130	30	30	30	25	1
TG-E-OR-050	50	40	130	30	30	30	25	1
TG-E-OR-065	65	40	130	30	30	30	25	1
TG-E-OR-080	80	40	130	30	30	30	25	1
TG-E-OR-100	100	40	130	30	30	30	25	1

# INDUSTRIAL HOSES - compensators

## Rubber compensators



### E - Viton

**Internal layer:** FPM (Viton)  
**Reinforcement:** Rubber-coated Nylon cord  
**External layer:** Conductive ECO rubber  
**Flanges:** Galvanized carbon steel  
**Working temp.:** From -15°C up to +90°C  
 (with peaks up to +130°C depending on the medium)

Designed for chemical and petrochemical installations, sulphur removal, application in power plants, etc. Extremely resistant to the influence of hot oils, benzene, xylene, products with aromatic content up to 50%, biodiesel and other aggressive media. Marked with a white-green-white stripe on a bellow.

code	I.D. [mm]	DIN 2501 flange PN	length [mm]	axial movement [± mm]	lateral movement [± mm]	angular movement [± degrees]	working pressure [bar]	vacuum [bar]
TG-E-VI-025	25*	16	130	20/30	30	30	16	1
TG-E-VI-032	32	16	130	20/30	30	30	16	1
TG-E-VI-040	40	16	130	20/30	30	30	16	1
TG-E-VI-050	50	16	130	20/30	30	30	16	1
TG-E-VI-065	65	16	130	20/30	30	30	16	0.7
TG-E-VI-080	80	16	130	20/30	30	30	16	0.6
TG-E-VI-100	100	16	130	20/30	30	20	16	0.4
TG-E-VI-125	125	16	130	20/30	30	20	16	0.3
TG-E-VI-150	150	16	130	20/30	30	20	16	0.3
TG-E-VI-200	200	10	130	30/25	30	10	10	0.3



### E - YS

**Internal layer:** HNBR rubber  
**Reinforcement:** Steel cord  
**External layer:** CR rubber  
**Flanges:** Galvanized carbon steel  
**Working temp.:** From -35°C up to +100°C  
 (with peaks up to +120°C depending on the medium)

Intended for installations conveying chemical or petrochemical products with aromatic content up to 50%, cooling water with oil-based anti-corrosion additives, lubricating and hydraulic oil, seawater. Marked with a yellow-blue-yellow stripe on a bellow.

code	I.D. [mm]	DIN 2501 flange PN	length [mm]	axial movement [± mm]	lateral movement [± mm]	angular movement [± degrees]	working pressure [bar]	vacuum [bar]
TG-E-YS-025	25	16	130	15/30	15	20	16	1
TG-E-YS-032	32	16	130	15/30	15	20	16	1
TG-E-YS-040	40	16	130	15/30	15	20	16	1
TG-E-YS-050	50	16	130	15/30	15	20	16	1
TG-E-YS-065	65	16	130	15/30	15	20	16	1
TG-E-YS-080	80	16	130	15/30	15	20	16	1
TG-E-YS-100	100	16	130	15/30	15	15	16	0.8
TG-E-YS-125	125	16	130	15/30	15	15	16	0.7
TG-E-YS-150	150	16	130	15/30	15	15	16	0.7
TG-E-YS-200	200	10	130	20/15	10	5	10	0.7
TG-E-YS-250	250	10	130	20/15	10	5	10	0.7
TG-E-YS-300	300	10	130	20/15	10	5	10	0.6

# INDUSTRIAL HOSES - compensators

## Rubber compensators



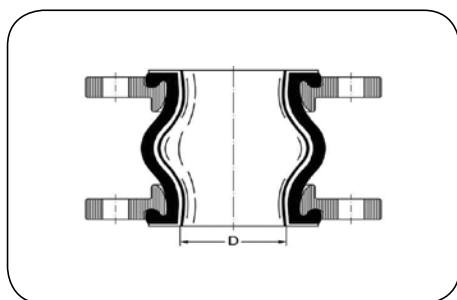
### E - BR

**Internal layer:** BR/NR rubber  
**Reinforcement:** Polyester cord  
**External layer:** BR/NR rubber  
**Flanges:** Galvanized carbon steel  
**Working temp.:** From -50°C up to +70°C  
 (with peaks up to +90°C depending on the medium)

Due to superior abrasion resistance compensators are suitable for the transfer of such media as: suspensions, sediment, emulsion, water with all kinds of additives, with solid particles, with abrasive effect. They are not designed to transfer media containing oils, fats or petrochemical products. Marked with a single blue dot on a bellows.

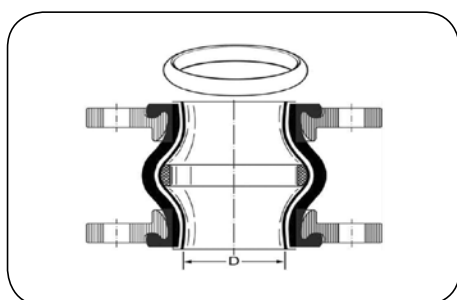
code	I.D. [mm]	DIN 2501 flange PN	length [mm]	axial movement [± mm]	lateral movement [± mm]	angular movement [± degrees]	working pressure [bar]	vacuum [bar]
TG-E-BR-025	25	16	130	20/30	30	25	16	1
TG-E-BR-032	32	16	130	20/30	30	25	16	1
TG-E-BR-040	40	16	130	20/30	30	25	16	1
TG-E-BR-050	50	16	130	20/30	30	25	16	1
TG-E-BR-065	65	16	130	20/30	30	25	16	0.7
TG-E-BR-080	80	16	130	20/30	30	25	16	0.6
TG-E-BR-100	100	16	130	20/30	30	15	16	0.4
TG-E-BR-125	125	16	130	20/30	30	15	16	0.3
TG-E-BR-150	150	16	130	20/30	30	15	16	0.3
TG-E-BR-200	200	10	130	30/25	30	5	10	0.3
TG-E-BR-250	250	10	130	30/10	15	5	10	0.2
TG-E-BR-300	300	10	130	30/10	15	5	10	0.1

## Rubber compensators - accessories for E type



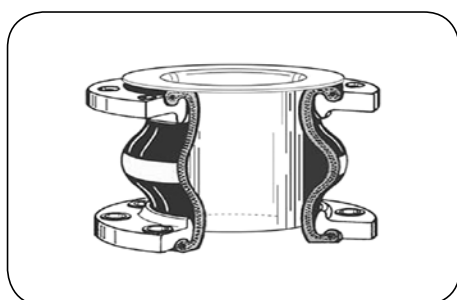
### Internal PTFE liner

PTFE liner is applied when chemical resistance of rubber bellows is not sufficient for the medium. Suitable for almost all media. Available for compensators in the range of DN25 ÷ DN300 in diameter. Supplied integrated with a rubber compensator (factory-mounted). If the liner is used, displacement values given in the catalogue must be reduced by about 50%. Suitable for working pressure up to 6 bar. Not suitable for vacuum.



### Internal PTFE liner + PTFE vacuum ring

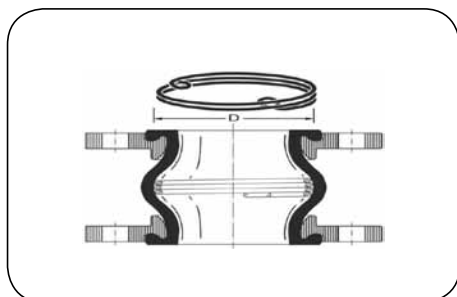
Parameters are the same as for PTFE liner (see above) although with an additional PTFE ring it can be used for vacuum but only in the temperature up to +70°C.



### Internal flow liner

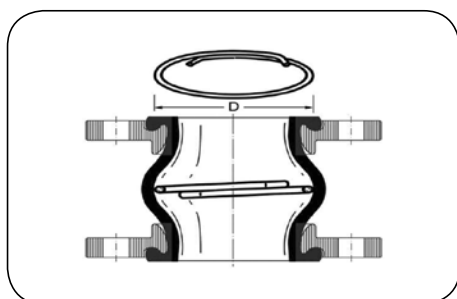
Made of 1.4571 (AISI 316Ti) steel as a standard, applied when abrasive media may mechanically damage a rubber bellow (e.g. granules). Available for compensators in the range of DN25 ÷ DN600 in diameter. It can be from 1 to 3 mm thick depending on a diameter. The flow liner significantly reduces angular and lateral movement of the compensator.

Note: When the flow liner is used, the working diameter of the compensator is reduced. It is crucial to put a gasket between the flow liner and counter flange of a pipeline.



### Internal supporting steel spiral

Applied when the value of working vacuum in a pipeline is higher than the vacuum of a particular compensator. Available for compensators in the range of DN50 ÷ DN300 in diameter. Made of 1.4571 (AISI 316Ti) steel. The number and thickness of convolutions depend on the nominal diameter of the compensator. If the spiral is used, displacement values given in the catalogue must be reduced by about 50%.

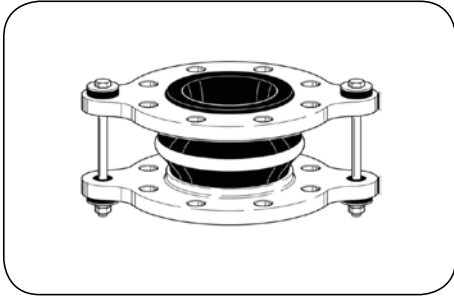


### Internal supporting steel ring

Applied when the value of working vacuum in a pipeline is higher than the vacuum of a particular compensator. Available for compensators in the range of DN125 ÷ DN600 in diameter. Made of 1.4571 (AISI 316Ti) steel. If the ring is used, displacement values given in the catalogue must be reduced by about 50%.

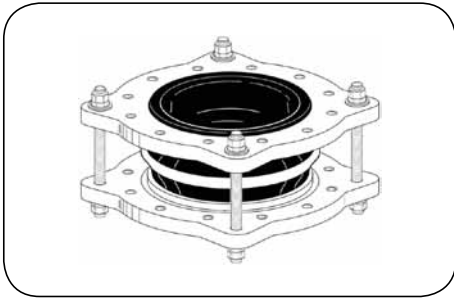
## INDUSTRIAL HOSES - compensators

### Rubber compensators - accessories for E type

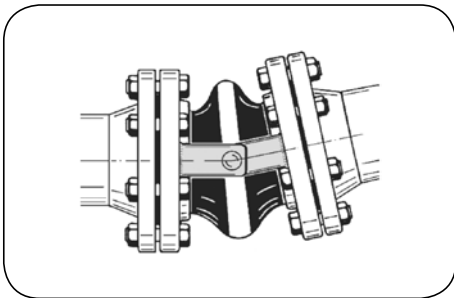


#### Tie rods

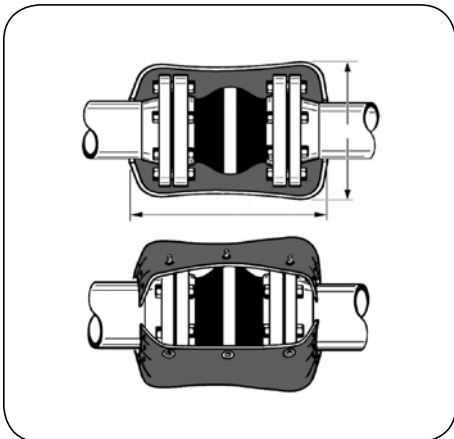
Tie rods are recommended when no sufficiently solid fix points can be built into an installation in order to transmit the reactive force from this installation. The force comes from the internal pressure. Available as a set integrated with the flanges of a compensator. For diameters up to DN300 they include rubber washers that additionally dampen noise and vibration.



For diameters above DN350 tie rods include steel washers (spherical and conical).



Custom made (only for angular displacement).



#### Fire-retardant protective cover

Made of several layers of fibreglass fabric with external silicone-aluminum-fibreglass layer. Designed for overall protection of a rubber compensator against direct impact of a very high temperature or even flame in the temperature up to +800°C for up to 30 minutes. The cover is also resistant to oil, chemicals and weather conditions. It is big enough to protect counter flanges of the installation as well. It has no impact on the permissible displacement of the compensator.

## Steel compensators

Steel compensators are designed to absorb a particular amount of displacement of the pipeline according to specified working conditions and size. In order to obtain the maximum service life in the conditions of working pressure follow the recommendations listed below:

### Before installation

Check if the compensator delivered to the installation spot has not been damaged during shipment. Any damage caused to the steel bellow may severely shorten service life of the compensator. Only if the assembly of installation is completed, the compensator can be fitted into position. It applies to pipe supports or moving props of the piping system in particular.

The compensator must not be used as a pipeline support neither carry its load. No torsion or rotation - an outcome of stress occurring in the pipeline during installation or service must be imposed on the compensator.

### During installation

No mechanical impact e.g. heavy blow should be imposed on a compensator. It is unacceptable to drop the compensator on hard surface. Do not use rope or chain directly on the bellow to lift the compensator during installation. The compensators with internal sleeves should be installed pointing the flow direction. It is essential to maintain the alignment of the compensator with the pipeline during installation.

Nuts of compensators with flanges should be tightened up one after another diagonally in several attempts. The space left for the compensator in the pipeline must be exactly the same as the length required to install the compensator.

### After installation

Remove all shipping bars and other devices employed to keep the initial stress of the compensator (if there were any). Check if the compensator has not been damaged during shipment. No foreign material can be trapped between the corrugations of the bellow. Check if all pipe guides and supports are adequate before pressure test of the installation. Never exceed the maximum working pressure. If the pipeline is covered with insulating coating, do not allow the material of the coating to enter the corrugation of the bellow.

### During service

Working pressure and displacement of the compensator shall never exceed the permissible values. It is crucial to avoid pressure jumps caused either by faulty equipment or its malfunction. If the working conditions of installations such as pressure or temperature change it is recommended to re-examine the adequacy of the compensator for these modified working conditions.

### Maintenance

Steel compensators are virtually maintenance-free. They only require periodic visual inspection during service. In case of any malfunction - leakage, cracks, signs of corrosion or damage of steel bellows in particular, the compensator must be replaced with a new one. Steel compensators are unrecoverable.

### Temperature correction factor for steel compensators

The working parameters of steel compensators given in the tables are for the maximum working pressure of each particular type: 2.5 - 10 - 16 - 25 bar and for the temperature of +20°C.

In order to calculate the maximum working pressure for working temperature other than the one specified in the parameters, use the correction factors given in the table below.

working temperature [°C]	20	100	150	200	250	300	350	400
correction factor	1.00	0.83	0.78	0.74	0.71	0.67	0.64	0.62

### Note!

The allowable displacement values (axial, lateral and angular) given in the tables for the particular compensators, must be treated as alternatives. The values must not occur simultaneously.

# INDUSTRIAL HOSES - compensators

## Steel compensators



### AX1SU

**Fittings type:** Weld ends  
**Bellow material:** AISI 321 (1.4541)  
**Fittings material:** Carbon steel (1.0345)  
**Working temp.:** Up to +400°C  
**Working press.:** Up to 2.5; 6; 10; 16; 25 bar  
 (depending on version)

Apply a correction factor for working temperatures above +20°C.

Standard axial compensator with weld ends, intended for application in pipe systems to absorb axial movement. Designed for a service life of at least 1000 full displacement cycles (at +20°C).

code	DN	working pressure [bar]	movement			weld ends diameter x thickness [mm]	spring rate			overall length [mm]	weight [kg]
			axial [± mm]	lateral [± mm]	angular [± °]		axial [N/mm]	lateral [N/mm]	angular [Nm/°]		
PN 2.5											
BM-AX1SU-03-0050-023	50	2.5	11.5	7	22	60.3 x 2.9	88	61	0.3	215	0.7
BM-AX1SU-03-0050-038	50	2.5	19	19.5	25	60.3 x 2.9	54	15	0.4	280	0.8
BM-AX1SU-03-0065-027	65	2.5	13.5	6	20	76.1 x 2.9	82	112	0.4	205	0.8
BM-AX1SU-03-0065-043	65	2.5	21.5	16	25	76.1 x 2.9	80	39	0.6	270	1.3
BM-AX1SU-03-0080-026	80	2.5	13	3	14.5	88.9 x 3.2	109	449	0.5	165	1.2
BM-AX1SU-03-0080-043	80	2.5	21.5	8.5	24.5	88.9 x 3.2	66	86	0.7	210	1.4
BM-AX1SU-03-0080-065	80	2.5	32.5	19.5	25	88.9 x 3.2	44	24	1.1	270	1.5
BM-AX1SU-03-0100-037	100	2.5	18.5	3.5	16	114.3 x 3.6	95	507	0.8	165	1.7
BM-AX1SU-03-0100-053	100	2.5	26.5	7.5	23.5	114.3 x 3.6	64	138	1.1	200	1.7
BM-AX1SU-03-0100-092	100	2.5	46	23	25	114.3 x 3.6	59	39	1.7	275	2.6
BM-AX1SU-03-0125-038	125	2.5	19	3	14	139.7 x 4.0	93	831	1.2	165	2.2
BM-AX1SU-03-0125-065	125	2.5	32.5	9	24	139.7 x 4.0	85	206	1.8	215	3.2
BM-AX1SU-03-0125-097	125	2.5	48.5	25	25	139.7 x 4.0	71	64	3.1	315	4.9
BM-AX1SU-03-0150-041	150	2.5	20.5	2.5	12.5	168.3 x 4.5	113	980	2	175	2.6
BM-AX1SU-03-0150-083	150	2.5	41.5	12	25	168.3 x 4.5	57	106	3.2	250	3.4
BM-AX1SU-03-0150-123	150	2.5	61.5	36.5	25	168.3 x 4.5	70	46	6.1	405	6.8
BM-AX1SU-03-0200-057	200	2.5	28.5	3.5	13.5	219.1 x 6.3	87	841	3.5	190	4.5
BM-AX1SU-03-0200-092	200	2.5	46	12	22	219.1 x 6.3	104	304	6.1	275	7.3
BM-AX1SU-03-0200-114	200	2.5	57	18.5	25	219.1 x 6.3	54	110	7.1	310	7.1
BM-AX1SU-03-0250-050	250	2.5	25	2.5	9.5	273.0 x 6.3	92	1780	5.3	190	6.1
BM-AX1SU-03-0250-109	250	2.5	54.5	14	21	273.0 x 6.3	56	203	11	310	8.8
BM-AX1SU-03-0250-149	250	2.5	74.5	28	25	273.0 x 6.3	64	115	16	400	14.3
BM-AX1SU-03-0300-063	300	2.5	31.5	3	10.5	323.9 x 7.1	124	3140	7.8	190	9.1
BM-AX1SU-03-0300-119	300	2.5	59.5	9	19.5	323.9 x 7.1	46	321	11	245	8.5
BM-AX1SU-03-0300-159	300	2.5	79.5	26.5	25	323.9 x 7.1	61	150	22	415	17.6
PN 6											
BM-AX1SU-06-0050-023	50	6	11.5	7	22	60.3 x 2.9	88	61	0.6	215	0.7
BM-AX1SU-06-0050-040	50	6	20	24	25	60.3 x 2.9	79	15	1.1	315	1.1
BM-AX1SU-06-0065-026	65	6	13	5.5	19	76.1 x 2.9	84	112	0.8	205	0.8
BM-AX1SU-06-0065-043	65	6	21.5	16	25	76.1 x 2.9	81	39	1.4	270	1.3
BM-AX1SU-06-0080-025	80	6	12.5	3	14	88.9 x 3.2	110	449	1.1	165	1.2
BM-AX1SU-06-0080-042	80	6	21	8.5	23.5	88.9 x 3.2	66	86	1.6	210	1.4
BM-AX1SU-06-0080-059	80	6	29.5	18.5	25	88.9 x 3.2	100	52	2.5	275	2.3
BM-AX1SU-06-0100-035	100	6	17.5	3	15.5	114.3 x 3.6	94	507	1.7	165	1.7
BM-AX1SU-06-0100-053	100	6	26.5	7.5	23.5	114.3 x 3.6	98	187	2.5	205	2.0
BM-AX1SU-06-0100-076	100	6	38	21	25	114.3 x 3.6	118	81	4.5	295	4.3
BM-AX1SU-06-0125-035	125	6	17.5	2.5	12.5	139.7 x 4.0	92	831	2.4	165	2.2
BM-AX1SU-06-0125-062	125	6	31	8.5	23	139.7 x 4.0	85	206	4	215	3.2
BM-AX1SU-06-0125-082	125	6	41	21.5	25	139.7 x 4.0	111	103	7.2	320	6.1

# INDUSTRIAL HOSES - compensators

## Steel compensators - AX1SU

code	DN	working pressure [bar]	movement			weld ends diameter x thickness [mm]	spring rate			overall length [mm]	weight [kg]
			axial [± mm]	lateral [± mm]	angular [± °]		axial [N/mm]	lateral [N/mm]	angular [Nm/°]		
PN 6											
BM-AX1SU-06-0150-038	150	6	19	2.5	11.5	168.3 x 4.5	112	980	4.1	175	2.6
BM-AX1SU-06-0150-065	150	6	32.5	10	20	168.3 x 4.5	131	295	7.9	260	4.9
BM-AX1SU-06-0150-103	150	6	51.5	26.5	25	168.3 x 4.5	152	124	13	365	9.0
BM-AX1SU-06-0200-051	200	6	25.5	3	12	219.1 x 6.3	86	841	7.5	190	4.5
BM-AX1SU-06-0200-088	200	6	44	11.5	21	219.1 x 6.3	106	304	14	275	7.3
BM-AX1SU-06-0200-110	200	6	55	19	25	219.1 x 6.3	154	265	18	325	11.3
BM-AX1SU-06-0250-046	250	6	23	2.5	9	273.0 x 6.3	94	1780	12	190	6.1
BM-AX1SU-06-0250-086	250	6	43	9	16.5	273.0 x 6.3	109	556	22	275	9.1
BM-AX1SU-06-0250-111	250	6	55.5	18.5	22	273.0 x 6.3	117	288	32	365	14.9
BM-AX1SU-06-0300-058	300	6	29	2.5	9.5	323.9 x 7.1	127	3140	17	190	9.1
BM-AX1SU-06-0300-084	300	6	42	6	14	323.9 x 7.1	87	915	23	235	10.0
BM-AX1SU-06-0300-115	300	6	57.5	12	19	323.9 x 7.1	121	644	33	295	15.0
PN 10											
BM-AX1SU-10-0025-012	25	10	6	4.5	20	33.7 x 2.6	96	43	0.3	185	0.3
BM-AX1SU-10-0032-015	32	10	7.5	4	20.5	42.4 x 2.6	89	68	0.3	175	0.5
BM-AX1SU-10-0040-019	40	10	9.5	8	23	48.3 x 2.6	102	39	0.6	225	0.5
BM-AX1SU-10-0050-018	50	10	9	4.5	17	60.3 x 2.9	110	116	0.8	195	0.7
BM-AX1SU-10-0050-031	50	10	15.5	14	25	60.3 x 2.9	105	34	1.3	265	1.1
BM-AX1SU-10-0065-025	65	10	12.5	5.5	18.5	76.1 x 2.9	85	112	1.4	205	0.8
BM-AX1SU-10-0065-036	65	10	18	12.5	25	76.1 x 2.9	98	54	2.1	260	1.2
BM-AX1SU-10-0080-023	80	10	11.5	2.5	13	88.9 x 3.2	111	449	1.7	165	1.2
BM-AX1SU-10-0080-033	80	10	16.5	5.5	18.5	88.9 x 3.2	128	231	2.3	195	1.4
BM-AX1SU-10-0080-046	80	10	23	14.5	25	88.9 x 3.2	127	84	4	275	2.3
BM-AX1SU-10-0100-030	100	10	15	2.5	13	114.3 x 3.6	95	539	2.7	165	1.5
BM-AX1SU-10-0100-043	100	10	21.5	6.5	19.5	114.3 x 3.6	107	239	4	205	2.3
BM-AX1SU-10-0100-057	100	10	28.5	16	25	114.3 x 3.6	152	129	7.1	295	4.3
BM-AX1SU-10-0125-030	125	10	15	2	11	139.7 x 4.0	96	886	3.8	165	1.9
BM-AX1SU-10-0125-045	125	10	22.5	5.5	16.5	139.7 x 4.0	105	364	5.8	205	2.8
BM-AX1SU-10-0125-063	125	10	31.5	13.5	23.5	139.7 x 4.0	144	204	9.7	280	5.4
BM-AX1SU-10-0150-028	150	10	14	1.5	8.5	168.3 x 4.5	220	3380	5.8	160	3.2
BM-AX1SU-10-0150-061	150	10	30.5	8.5	18.5	168.3 x 4.5	139	344	12	245	4.3
BM-AX1SU-10-0150-071	150	10	35.5	16.5	22.5	168.3 x 4.5	172	207	19	340	5.9
BM-AX1SU-10-0200-035	200	10	17.5	2	8.5	219.1 x 6.3	251	3980	12	180	6.1
BM-AX1SU-10-0200-067	200	10	33.5	6.5	16	219.1 x 6.3	139	703	18	225	6.5
BM-AX1SU-10-0200-091	200	10	45.5	13	22	219.1 x 6.3	185	440	25	290	11.3
BM-AX1SU-10-0250-035	250	10	17.5	1.5	6.5	273.0 x 6.3	258	6760	19	180	6.8
BM-AX1SU-10-0250-065	250	10	32.5	5	12.5	273.0 x 6.3	142	1280	26	225	8.1
BM-AX1SU-10-0250-095	250	10	47.5	12	18.5	273.0 x 6.3	180	632	42	310	15.8
BM-AX1SU-10-0300-039	300	10	19.5	1.5	6	323.9 x 7.1	238	8620	26	180	10.3
BM-AX1SU-10-0300-091	300	10	45.5	8	15	323.9 x 7.1	150	1080	47	265	13.5
BM-AX1SU-10-0300-115	300	10	57.5	14	19	323.9 x 7.1	200	788	66	335	22.8
PN 16											
BM-AX1SU-16-0025-012	25	16	6	4.5	20	33.7 x 2.6	97	43	0.4	185	0.3
BM-AX1SU-16-0032-015	32	16	7.5	4	20.5	42.4 x 2.6	89	68	0.5	175	0.5
BM-AX1SU-16-0040-018	40	16	9	8	22	48.3 x 2.6	174	56	1.1	235	0.6
BM-AX1SU-16-0050-018	50	16	9	4.5	17	60.3 x 2.9	111	116	1.2	195	0.7
BM-AX1SU-16-0050-028	50	16	14	13.5	25	60.3 x 2.9	173	51	2.2	275	1.3
BM-AX1SU-16-0065-020	65	16	10	4	15	76.1 x 2.9	107	182	1.9	195	0.9
BM-AX1SU-16-0065-037	65	16	18.5	13.5	25	76.1 x 2.9	176	85	3.4	270	1.6
BM-AX1SU-16-0080-021	80	16	10.5	2.5	12	88.9 x 3.2	119	411	2.8	170	1.2
BM-AX1SU-16-0080-040	80	16	20	10.5	23.5	88.9 x 3.2	190	161	5.2	245	2.3
BM-AX1SU-16-0100-029	100	16	14.5	2.5	13	114.3 x 3.6	152	743	4.4	170	2.0
BM-AX1SU-16-0100-043	100	16	21.5	7	19.5	114.3 x 3.6	190	354	6.8	215	3.1
BM-AX1SU-16-0125-019	125	16	9.5	1	7	139.7 x 4.0	198	3070	5.4	155	2.3
BM-AX1SU-16-0125-040	125	16	20	4.5	14.5	139.7 x 4.0	163	715	8.6	195	3.0
BM-AX1SU-16-0125-050	125	16	25	7.5	18.5	139.7 x 4.0	183	431	12	230	4.7
BM-AX1SU-16-0150-024	150	16	12	1.5	7	168.3 x 4.5	330	4890	9.6	165	3.7
BM-AX1SU-16-0150-040	150	16	20	3.5	12	168.3 x 4.5	202	1140	13	195	3.7
BM-AX1SU-16-0150-063	150	16	31.5	9.5	19.5	168.3 x 4.5	247	526	20	255	6.9



# INDUSTRIAL HOSES - compensators

## Steel compensators - AX1SU

code	DN	working pressure [bar]	movement			weld ends diameter x thickness [mm]	spring rate			overall length [mm]	weight [kg]
			axial [± mm]	lateral [± mm]	angular [± °]		axial [N/mm]	lateral [N/mm]	angular [Nm/°]		
PN 16											
BM-AX1SU-16-0200-032	200	16	16	1.5	7.5	219.1 x 6.3	393	8970	17	165	6.9
BM-AX1SU-16-0200-060	200	16	30	6	14.5	219.1 x 6.3	206	1050	28	230	8.6
BM-AX1SU-16-0200-075	200	16	37.5	12.5	18	219.1 x 6.3	278	617	45	320	14.9
BM-AX1SU-16-0250-034	250	16	17	2	6.5	273.0 x 6.3	269	5220	32	195	8.1
BM-AX1SU-16-0250-059	250	16	29.5	4.5	11.5	273.0 x 6.3	218	1890	43	230	10.8
BM-AX1SU-16-0250-080	250	16	40	12	15.5	273.0 x 6.3	282	866	75	340	18.7
BM-AX1SU-16-0300-028	300	16	14	0.5	4.5	323.9 x 7.1	469	27100	36	165	11.1
BM-AX1SU-16-0300-063	300	16	31.5	4	10.5	323.9 x 7.1	282	3750	56	220	15.4
BM-AX1SU-16-0300-089	300	16	44.5	10	14.5	323.9 x 7.1	259	1220	98	320	20.4
PN 25											
BM-AX1SU-25-0050-015	50	25	7.5	3	14	60.3 x 2.9	130	167	1.6	185	0.7
BM-AX1SU-25-0050-022	50	25	11	8.5	21.5	60.3 x 2.9	222	104	2.6	240	1.0
BM-AX1SU-25-0065-016	65	25	8	3	12	76.1 x 2.9	150	242	2.8	195	1.0
BM-AX1SU-25-0065-029	65	25	14.5	12	22.5	76.1 x 2.9	270	112	5.4	285	2.0
BM-AX1SU-25-0080-020	80	25	10	2.5	11.5	88.9 x 3.2	191	655	4.2	170	1.4
BM-AX1SU-25-0080-031	80	25	15.5	6.5	18	88.9 x 3.2	241	288	6.7	220	2.3
BM-AX1SU-25-0100-023	100	25	11.5	2	10	114.3 x 3.6	266	1850	6	160	2.3
BM-AX1SU-25-0100-036	100	25	18	6	16.5	114.3 x 3.6	230	474	11	215	2.6
BM-AX1SU-25-0125-028	125	25	14	2.5	10.5	139.7 x 4.0	223	1300	12	185	3.4
BM-AX1SU-25-0125-043	125	25	21.5	6	16	139.7 x 4.0	279	703	17	225	5.5
BM-AX1SU-25-0150-025	150	25	12.5	1.5	7.5	168.3 x 4.5	452	6060	15	165	4.5
BM-AX1SU-25-0150-047	150	25	23.5	6.5	14.5	168.3 x 4.5	321	915	28	240	6.9
BM-AX1SU-25-0200-027	200	25	13.5	1	6.5	219.1 x 6.3	585	11900	26	170	7.7
BM-AX1SU-25-0200-051	200	25	25.5	4.5	12	219.1 x 6.3	313	1820	40	220	10.
BM-AX1SU-25-0200-060	200	25	30	8.5	14.5	219.1 x 6.3	352	1060	59	285	13.3
BM-AX1SU-25-0250-024	250	25	12	1	4.5	273.0 x 6.3	718	25600	40	170	9.7
BM-AX1SU-25-0250-046	250	25	23	3.5	9	273.0 x 6.3	372	3610	63	225	12.5
BM-AX1SU-25-0250-063	250	25	31.5	7	12	273.0 x 6.3	358	1670	92	285	16.6
BM-AX1SU-25-0300-030	300	25	15	1	5	323.9 x 7.1	622	18600	67	190	13.4
BM-AX1SU-25-0300-048	300	25	24	3.5	8	323.9 x 7.1	389	4480	97	240	15.4
BM-AX1SU-25-0300-065	300	25	32.5	5.5	10.5	323.9 x 7.1	358	2760	115	265	20.4

# INDUSTRIAL HOSES - compensators

## Steel compensators



### AX1BU

**Fittings type:** Swivel flanges EN 1092-1  
**Bellow material:** AISI 321 (1.4541)  
**Fittings material:** Carbon steel (1.0460)  
**Working temp.:** Up to +400°C  
**Working press.:** Up to 2.5; 6; 10; 16; 25 bar  
 (depending on version)

Apply a correction factor for working temperatures above +20°C.

Axial compensator with swivel flanges, intended for application in pipe systems to absorb axial movement. Designed for a service life of at least 1000 full displacement cycles (at +20°C).

code	DN	working pressure [bar]	movement			spring rate			overall length [mm]	weight [kg]
			axial [± mm]	lateral [± mm]	angular [± °]	axial [N/mm]	lateral [N/mm]	angular [Nm/°]		
PN 2.5										
BM-AX1BU-03-0050-023	50	2.5	11.5	7	22	88	60	0.3	155	3.3
BM-AX1BU-03-0050-038	50	2.5	19	19.5	25	54	14	0.4	220	3.4
BM-AX1BU-03-0050-027	65	2.5	13.5	6	20	82	108	0.4	145	4.1
BM-AX1BU-03-0065-043	65	2.5	21.5	15	25	52	27	0.6	200	4.3
BM-AX1BU-03-0065-057	65	2.5	28.5	26.5	25	39	12	0.7	250	4.4
BM-AX1BU-03-0080-026	80	2.5	13	3	14.5	109	401	0.6	150	6.4
BM-AX1BU-03-0080-043	80	2.5	21.5	8.5	24.5	66	80	0.8	195	6.6
BM-AX1BU-03-0080-065	80	2.5	32.5	19.5	25	44	24	1.1	250	6.7
BM-AX1BU-03-0100-037	100	2.5	18.5	3.5	16	95	507	0.8	155	7.2
BM-AX1BU-03-0100-053	100	2.5	26.5	7.5	23.5	64	138	1.1	190	7.4
BM-AX1BU-03-0100-092	100	2.5	46	23	25	59	40	1.7	265	8.4
BM-AX1BU-03-0125-038	125	2.5	19	3	14	93	831	1.2	160	9.5
BM-AX1BU-03-0125-065	125	2.5	32.5	9	24	85	197	1.8	215	10.5
BM-AX1BU-03-0125-097	125	2.5	48.5	25	25	71	63	3.1	305	12.2
BM-AX1BU-03-0150-041	150	2.5	20.5	2.5	12.5	113	980	2	180	10.5
BM-AX1BU-03-0150-083	150	2.5	41.5	12	25	57	112	3.1	250	11.1
BM-AX1BU-03-0150-123	150	2.5	61.5	36.5	25	70	46	6	400	14.5
BM-AX1BU-03-0200-057	200	2.5	28.5	3.5	13.5	87	879	3.4	185	15.4
BM-AX1BU-03-0200-100	200	2.5	50	12.5	24	48	137	5.4	260	16.2
BM-AX1BU-03-0200-114	200	2.5	57	18.5	25	54	109	7.1	310	17.6
BM-AX1BU-03-0250-050	250	2.5	25	2.5	9.5	92	1860	5.3	190	19.8
BM-AX1BU-03-0250-109	250	2.5	54.5	14	21	56	207	11	310	22.5
BM-AX1BU-03-0250-149	250	2.5	74.5	28	25	64	117	15	405	28.
BM-AX1BU-03-0300-063	300	2.5	31.5	3	10.5	124	3000	8	205	27.4
BM-AX1BU-03-0300-118	300	2.5	59	9	19.5	46	330	11	255	27.4
BM-AX1BU-03-0300-159	300	2.5	79.5	26.5	25	61	150	22	420	35.9
PN 6										
BM-AX1BU-06-0050-023	50	6	11.5	7	22	88	60	0.6	155	3.3
BM-AX1BU-06-0050-040	50	6	20	24	25	79	15	1.1	255	3.8
BM-AX1BU-06-0065-026	65	6	13	5.5	19	84	108	0.9	145	4.1
BM-AX1BU-06-0065-043	65	6	21.5	16	25	81	39	1.4	210	4.5
BM-AX1BU-06-0080-025	80	6	12.5	3	14	110	401	1.1	150	6.4
BM-AX1BU-06-0080-042	80	6	21	8.5	23.5	66	80	1.7	195	6.6
BM-AX1BU-06-0080-059	80	6	29.5	18.5	25	100	52	2.5	260	7.5
BM-AX1BU-06-0100-035	100	6	17.5	3	15.5	94	507	1.7	155	7.2
BM-AX1BU-06-0100-053	100	6	26.5	7.5	23.5	98	179	2.6	200	7.8
BM-AX1BU-06-0100-076	100	6	38	21	25	118	82	4.4	280	9.8
BM-AX1BU-06-0125-035	125	6	17.5	2.5	12.5	92	831	2.4	160	9.5

# INDUSTRIAL HOSES - compensators

## Steel compensators - AX1BU

code	DN	working pressure [bar]	movement			spring rate			overall length [mm]	weight [kg]
			axial [± mm]	lateral [± mm]	angular [± °]	axial [N/mm]	lateral [N/mm]	angular [Nm/°]		
PN 6										
BM-AX1BU-06-0125-062	125	6	31	8.5	23	85	197	4	215	10.5
BM-AX1BU-06-0125-082	125	6	41	21.5	25	111	103	7.2	310	13.4
BM-AX1BU-06-0150-038	150	6	19	2.5	11.5	112	980	4.1	180	10.5
BM-AX1BU-06-0150-065	150	6	32.5	10	20	131	306	7.7	255	12.6
BM-AX1BU-06-0150-103	150	6	51.5	26.5	25	152	126	13	364	16.7
BM-AX1BU-06-0200-051	200	6	25.5	3	12	86	879	7.4	185	15.4
BM-AX1BU-06-0200-088	200	6	44	11.5	21	106	311	14	275	18.6
BM-AX1BU-06-0200-110	200	6	55	19	25	154	265	18	330	23.1
BM-AX1BU-06-0250-046	250	6	23	2.5	9	94	1860	12	190	19.8
BM-AX1BU-06-0250-086	250	6	43	9	16.5	109	556	22	280	23.8
BM-AX1BU-06-0250-111	250	6	55.5	18.5	22	117	283	32	375	28.6
BM-AX1BU-06-0300-058	300	6	29	2.5	9.5	127	3000	17	205	27.4
BM-AX1BU-06-0300-084	300	6	42	6	14	87	877	24	240	28.3
BM-AX1BU-06-0300-115	300	6	57.5	12	19	121	629	34	305	34.9
PN 10										
BM-AX1BU-10-0025-012	25	10	6	4.5	20	96	45	0.3	115	2.4
BM-AX1BU-10-0032-015	32	10	7.5	4	20.5	89	68	0.3	110	4.
BM-AX1BU-10-0040-019	40	10	9.5	8	23	102	39	0.6	155	4.5
BM-AX1BU-10-0050-018	50	10	9	4.5	17	110	110	0.8	145	5.8
BM-AX1BU-10-0050-031	50	10	15.5	14	25	105	35	1.3	210	6.2
BM-AX1BU-10-0065-025	65	10	12.5	5.5	18.5	85	115	1.3	150	6.7
BM-AX1BU-10-0065-035	65	10	17.5	12	25	99	53	2.1	210	7.1
BM-AX1BU-10-0080-023	80	10	11.5	2.5	13	111	401	1.7	155	7.7
BM-AX1BU-10-0080-033	80	10	16.5	5.5	18.5	128	240	2.3	180	8.
BM-AX1BU-10-0080-046	80	10	23	14.5	25	127	83	4.1	265	8.8
BM-AX1BU-10-0100-030	100	10	15	2.5	13	95	539	2.7	155	9.5
BM-AX1BU-10-0100-043	100	10	21.5	13	19.5	107	248	4	195	10.1
BM-AX1BU-10-0100-057	100	10	28.5	16	25	152	123	7.3	295	12.1
BM-AX1BU-10-0125-030	125	10	15	2	11	96	886	3.8	155	11.7
BM-AX1BU-10-0125-045	125	10	22.5	5.5	16.5	105	378	5.7	195	12.3
BM-AX1BU-10-0125-063	125	10	31.5	13.5	23.5	144	193	10	280	14.9
BM-AX1BU-10-0150-028	150	10	14	1.5	8.5	220	3380	5.8	165	15.7
BM-AX1BU-10-0150-061	150	10	30.5	8.5	18.5	139	351	12	250	17.4
BM-AX1BU-10-0150-071	150	10	35.5	16.5	22.5	172	213	19	345	19.2
BM-AX1BU-10-0200-035	200	10	17.5	2	8.5	251	4150	12	185	21.3
BM-AX1BU-10-0200-067	200	10	33.5	6.5	16	139	703	18	230	22.5
BM-AX1BU-10-0200-091	200	10	45.5	13	22	185	440	25	300	26.5
BM-AX1BU-10-0250-035	250	10	17.5	1.5	6.5	258	6760	19	190	27.6
BM-AX1BU-10-0250-065	250	10	32.5	5	12.5	142	1280	26	235	28.6
BM-AX1BU-10-0250-095	250	10	47.5	12	18.5	180	621	42	325	35.3
BM-AX1BU-10-0300-039	300	10	19.5	1.5	6	238	9460	25	185	32.
BM-AX1BU-10-0300-091	300	10	45.5	8	15	150	1100	47	275	36.7
BM-AX1BU-10-0300-115	300	10	57.5	14	19	200	805	65	350	47.2
PN 16										
BM-AX1BU-16-0025-012	25	16	6	4.5	20	97	45	0.4	115	2.4
BM-AX1BU-16-0032-015	32	16	7.5	4	20.5	89	68	0.5	110	4.
BM-AX1BU-16-0040-018	40	16	9	8	22	174	56	1.1	165	4.6
BM-AX1BU-16-0050-018	50	16	9	4.5	17	111	110	1.2	145	5.8
BM-AX1BU-16-0050-028	50	16	14	13.5	25	173	53	2.1	220	6.4
BM-AX1BU-16-0065-020	65	16	10	4	15	107	171	1.9	145	6.7
BM-AX1BU-16-0065-037	65	16	18.5	13.5	25	176	87	3.4	215	7.7
BM-AX1BU-16-0080-021	80	16	10.5	2.5	12	119	440	2.7	155	7.7
BM-AX1BU-16-0080-040	80	16	20	10.5	23.5	190	161	5.2	235	8.8
BM-AX1BU-16-0100-029	100	16	14.5	2.5	13	152	775	4.4	160	9.8
BM-AX1BU-16-0100-043	100	16	21.5	7	19.5	190	354	6.8	210	10.9
BM-AX1BU-16-0125-019	125	16	9.5	1	7	198	2810	5.6	150	11.8
BM-AX1BU-16-0125-040	125	16	20	4.5	14.5	163	684	8.8	190	12.9
BM-AX1BU-16-0125-050	125	16	25	7.5	18.5	183	431	12	225	14.2
BM-AX1BU-16-0150-024	150	16	12	1.5	7	330	4890	9.6	170	16.2

# INDUSTRIAL HOSES - compensators

## Steel compensators - AX1BU

code	DN	working pressure [bar]	movement			spring rate			overall length [mm]	weight [kg]
			axial [± mm]	lateral [± mm]	angular [± °]	axial [N/mm]	lateral [N/mm]	angular [Nm/°]		
PN 16										
BM-AX1BU-16-0150-040	150	16	20	3.5	12	202	1140	13	200	16.8
BM-AX1BU-16-0150-063	150	16	31.5	9.5	19.5	247	526	20	265	19.4
BM-AX1BU-16-0200-032	200	16	16	1.5	7.5	393	8190	17	180	21.7
BM-AX1BU-16-0200-060	200	16	30	6	14.5	206	1010	29	245	23.4
BM-AX1BU-16-0200-075	200	16	37.5	12.5	18	278	597	46	340	29.7
BM-AX1BU-16-0250-034	250	16	17	2	6.5	269	5220	32	220	30.4
BM-AX1BU-16-0250-059	250	16	29.5	4.5	11.5	218	1820	43	260	33.1
BM-AX1BU-16-0250-080	250	16	40	12	15.5	282	895	74	360	41.
BM-AX1BU-16-0300-028	300	16	14	0.5	4.5	469	26000	36	200	40.6
BM-AX1BU-16-0300-063	300	16	31.5	4	10.5	282	3840	55	255	44.9
BM-AX1BU-16-0300-089	300	16	44.5	10	14.5	259	1270	96	345	55.
PN 25										
BM-AX1BU-25-0050-015	50	25	7.5	3	14	130	157	1.7	135	5.2
BM-AX1BU-25-0050-022	50	25	11	8.5	21.5	222	99	2.7	190	5.6
BM-AX1BU-25-0065-016	65	25	8	3	12	150	268	2.6	140	6.7
BM-AX1BU-25-0065-029	65	25	14.5	12	22.5	270	112	5.4	235	7.7
BM-AX1BU-25-0080-020	80	25	10	2.5	11.5	191	655	4.2	165	8.7
BM-AX1BU-25-0080-031	80	25	15.5	6.5	18	241	305	6.6	215	9.6
BM-AX1BU-25-0100-023	100	25	11.5	2	10	266	1650	6.3	165	12.5
BM-AX1BU-25-0100-036	100	25	18	6	16.5	230	460	11	220	13.3
BM-AX1BU-25-0125-028	125	25	14	2.5	10.5	223	1300	12	190	17.3
BM-AX1BU-25-0125-043	125	25	21.5	6	16	279	703	17	235	19.4
BM-AX1BU-25-0150-025	150	25	12.5	1.5	7.5	452	6060	15	195	21.9
BM-AX1BU-25-0150-047	150	25	23.5	6.5	14.5	321	873	29	265	24.3
BM-AX1BU-25-0200-027	200	25	13.5	1	6.5	585	12300	26	195	31.3
BM-AX1BU-25-0200-051	200	25	25.5	4.5	12	313	1690	41	250	33.6
BM-AX1BU-25-0200-060	200	25	30	8.5	14.5	352	1040	60	315	36.9
BM-AX1BU-25-0250-024	250	25	12	1	4.5	718	22500	42	205	43.8
BM-AX1BU-25-0250-046	250	25	23	3.5	9	372	3740	62	255	46.6
BM-AX1BU-25-0250-063	250	25	31.5	7	12	358	1670	92	330	50.7
BM-AX1BU-25-0300-030	300	25	15	1	5	622	19800	65	225	57.9
BM-AX1BU-25-0300-048	300	25	24	3.5	8	389	4410	97	280	59.9
BM-AX1BU-25-0300-065	300	25	32.5	5.5	10.5	358	2820	114	305	64.9

# INDUSTRIAL HOSES - compensators

## Steel compensators



### AX1FU

**Fittings type:** Fixed flanges EN 1092-1  
**Bellow material:** AISI 321 (1.4541)  
**Fittings material:** Carbon steel (1.0460)  
**Working temp.:** Up to +400°C  
**Working press.:** Up to 2.5; 6; 10; 16; 25 bar (depending on version)

Apply a correction factor for working temperatures above +20°C.

Axial compensator with fixed flanges, intended for application in pipe systems to absorb axial movement. Designed for a service life of at least 1000 full displacement cycles (at +20°C).

code	DN	working pressure [bar]	movement			spring rate			overall length [mm]	weight [kg]
			axial [± mm]	lateral [± mm]	angular [± °]	axial [N/mm]	lateral [N/mm]	angular [Nm/°]		
PN 2.5										
BM-AX1FU-03-0050-023	50	2.5	11.5	7	22	88	63	0.3	145	3.3
BM-AX1FU-03-0050-038	50	2.5	19	19.5	25	54	14	0.4	215	3.4
BM-AX1FU-03-0065-027	65	2.5	13.5	6	20	82	115	0.4	135	4.
BM-AX1FU-03-0065-043	65	2.5	21.5	16	25	80	37	0.6	205	4.5
BM-AX1FU-03-0080-026	80	2.5	13	3	14.5	109	386	0.6	130	6.4
BM-AX1FU-03-0080-043	80	2.5	21.5	8.5	24.5	66	86	0.7	170	6.6
BM-AX1FU-03-0080-065	80	2.5	32.5	19.5	25	44	24	1.1	230	6.7
BM-AX1FU-03-0100-037	100	2.5	18.5	3.5	16	95	507	0.8	135	7.2
BM-AX1FU-03-0100-053	100	2.5	26.5	7.5	23.5	64	138	1.1	170	7.3
BM-AX1FU-03-0100-092	100	2.5	46	23	25	59	39	1.7	245	8.4
BM-AX1FU-03-0125-038	125	2.5	19	3	14	93	790	1.2	140	9.5
BM-AX1FU-03-0125-065	125	2.5	32.5	9	24	85	211	1.8	190	10.1
BM-AX1FU-03-0125-097	125	2.5	48.5	25	25	71	62	3.1	285	12.2
BM-AX1FU-03-0150-041	150	2.5	20.5	2.5	12.5	113	1070	1.9	155	10.5
BM-AX1FU-03-0150-083	150	2.5	41.5	12	25	57	110	3.1	230	11.1
BM-AX1FU-03-0150-123	150	2.5	61.5	36.5	25	70	46	6.1	380	14.5
BM-AX1FU-03-0200-057	200	2.5	28.5	3.5	13.5	87	879	3.4	165	15.1
BM-AX1FU-03-0200-092	200	2.5	46	12	22	104	324	6	250	18.6
BM-AX1FU-03-0200-114	200	2.5	57	18.5	25	54	113	7	285	17.6
BM-AX1FU-03-0250-050	250	2.5	25	2.5	9.5	92	1780	5.3	170	19.8
BM-AX1FU-03-0250-109	250	2.5	54.5	14	21	56	205	11	290	22.5
BM-AX1FU-03-0250-149	250	2.5	74.5	28	25	64	118	15	380	28.
BM-AX1FU-03-0300-063	300	2.5	31.5	3	10.5	124	2870	8.1	185	26.9
BM-AX1FU-03-0300-118	300	2.5	59	9	19.5	46	330	11	235	27.4
BM-AX1FU-03-0300-159	300	2.5	79.5	26.5	25	61	152	22	395	35.9
PN 6										
BM-AX1FU-06-0050-023	50	6	11.5	7	22	88	63	0.6	145	3.3
BM-AX1FU-06-0050-041	50	6	20.5	24.5	25	78	15	1.1	245	3.7
BM-AX1FU-06-0065-013	65	6	13	5.5	19	84	115	0.8	135	4.
BM-AX1FU-06-0065-043	65	6	21.5	16	25	81	37	1.4	205	4.5
BM-AX1FU-06-0080-025	80	6	12.5	3	14	110	386	1.1	130	6.4
BM-AX1FU-06-0080-042	80	6	21	8.5	23.5	66	86	1.6	170	6.6
BM-AX1FU-06-0080-059	80	6	29.5	18.5	25	100	53	2.4	235	7.5
BM-AX1FU-06-0100-035	100	6	17.5	3	15.5	94	507	1.7	135	7.2
BM-AX1FU-06-0100-053	100	6	26.5	7.5	23.5	98	191	2.5	175	7.8
BM-AX1FU-06-0100-076	100	6	38	21	25	118	79	4.5	260	9.8
BM-AX1FU-06-0125-035	125	6	17.5	2.5	12.5	92	790	2.4	140	9.5
BM-AX1FU-06-0125-062	125	6	31	8.5	23	85	211	3.9	190	10.1

# INDUSTRIAL HOSES - compensators

## Steel compensators - AX1FU

code	DN	working pressure [bar]	movement			spring rate			overall length [mm]	weight [kg]
			axial [± mm]	lateral [± mm]	angular [± °]	axial [N/mm]	lateral [N/mm]	angular [Nm/°]		
PN 6										
BM-AX1FU-06-0125-082	125	6	41	21.5	25	111	101	7.2	290	12.7
BM-AX1FU-06-0150-038	150	6	19	2.5	11.5	112	1070	3.9	155	10.5
BM-AX1FU-06-0150-065	150	6	32.5	10	20	131	295	7.9	235	12.6
BM-AX1FU-06-0150-103	150	6	51.5	26.5	25	152	126	13	340	16.7
BM-AX1FU-06-0200-051	200	6	25.5	3	12	86	879	7.4	165	15.1
BM-AX1FU-06-0200-088	200	6	44	11.5	21	106	324	14	250	18.6
BM-AX1FU-06-0200-110	200	6	55	19	25	154	270	18	305	23.1
BM-AX1FU-06-0250-046	250	6	23	2.5	9	94	1780	12	170	19.8
BM-AX1FU-06-0250-086	250	6	43	9	16.5	109	579	21	255	23.8
BM-AX1FU-06-0250-111	250	6	55.5	18.5	22	117	288	32	350	28.6
BM-AX1FU-06-0300-058	300	6	29	2.5	9.5	127	2870	17	185	26.9
BM-AX1FU-06-0300-084	300	6	42	6	14	87	858	24	220	28.3
BM-AX1FU-06-0300-115	300	6	57.5	12	19	121	636	34	280	34.9
PN 10										
BM-AX1FU-10-0025-012	25	10	6	4.5	20	96	41	0.3	120	2.3
BM-AX1FU-10-0032-015	32	10	7.5	4	20.5	89	68	0.3	110	3.8
BM-AX1FU-10-0040-019	40	10	9.5	8	23	102	39	0.6	160	4.4
BM-AX1FU-10-0050-018	50	10	9	4.5	17	110	116	0.8	135	5.8
BM-AX1FU-10-0050-031	50	10	15.5	14	25	105	34	1.3	205	6.2
BM-AX1FU-10-0065-025	65	10	12.5	5.5	18.5	85	112	1.4	145	6.6
BM-AX1FU-10-0065-036	65	10	18	12.5	25	98	54	2.1	200	7.
BM-AX1FU-10-0080-023	80	10	11.5	2.5	13	111	431	1.7	130	7.6
BM-AX1FU-10-0080-033	80	10	16.5	5.5	18.5	128	231	2.3	160	8.
BM-AX1FU-10-0080-046	80	10	23	14.5	25	127	86	4	240	8.8
BM-AX1FU-10-0100-030	100	10	15	2.5	13	95	490	2.8	135	9.5
BM-AX1FU-10-0100-043	100	10	21.5	6.5	19.5	107	239	4	175	10.1
BM-AX1FU-10-0100-057	100	10	28.5	16	25	152	125	7.2	270	11.6
BM-AX1FU-10-0125-030	125	10	15	2	11	96	806	4	135	11.7
BM-AX1FU-10-0125-045	125	10	22.5	5.5	16.5	105	364	5.8	175	12.1
BM-AX1FU-10-0125-063	125	10	31.5	13.5	23.5	144	197	9.9	255	14.2
BM-AX1FU-10-0150-028	150	10	14	1.5	8.5	220	3130	6	145	15.7
BM-AX1FU-10-0150-061	150	10	30.5	8.5	18.5	139	364	12	225	17.4
BM-AX1FU-10-0150-071	150	10	35.5	16.5	22.5	172	207	19	325	19.2
BM-AX1FU-10-0200-035	200	10	17.5	2	8.5	251	4320	12	160	20.9
BM-AX1FU-10-0200-067	200	10	33.5	6.5	16	139	673	18	210	22.5
BM-AX1FU-10-0200-091	200	10	45.5	13	22	185	440	25	275	26.5
BM-AX1FU-10-0250-035	250	10	17.5	1.5	6.5	258	7340	18	165	26.6
BM-AX1FU-10-0250-065	250	10	32.5	5	12.5	142	1340	26	210	28.6
BM-AX1FU-10-0250-095	250	10	47.5	12	18.5	180	632	42	300	35.3
BM-AX1FU-10-0300-039	300	10	19.5	1.5	6	238	9020	25	165	32.
BM-AX1FU-10-0300-091	300	10	45.5	8	15	150	1130	46	250	36.7
BM-AX1FU-10-0300-115	300	10	57.5	14	19	200	805	65	325	47.2
PN 16										
BM-AX1FU-16-0025-012	25	16	6	4.5	20	97	41	0.4	120	2.3
BM-AX1FU-16-0032-015	32	16	7.5	4	20.5	89	68	0.5	110	3.8
BM-AX1FU-16-0040-018	40	16	9	8	22	174	56	1.1	170	4.5
BM-AX1FU-16-0050-018	50	16	9	4.5	17	111	116	1.2	135	5.8
BM-AX1FU-16-0050-028	50	16	14	13.5	25	173	51	2.2	215	6.4
BM-AX1FU-16-0065-020	65	16	10	4	15	107	182	1.9	135	6.7
BM-AX1FU-16-0065-037	65	16	18.5	13.5	25	176	85	3.4	210	7.4
BM-AX1FU-16-0080-021	80	16	10.5	2.5	12	119	472	2.6	130	7.7
BM-AX1FU-16-0080-040	80	16	20	10.5	23.5	190	165	5.1	210	8.8
BM-AX1FU-16-0100-029	100	16	14.5	2.5	13	152	712	4.5	140	9.6
BM-AX1FU-16-0100-043	100	16	21.5	7	19.5	190	331	7.1	190	10.6
BM-AX1FU-16-0125-019	125	16	9.5	1	7	198	3070	5.4	125	11.7
BM-AX1FU-16-0125-040	125	16	20	4.5	14.5	163	715	8.6	165	12.6
BM-AX1FU-16-0125-050	125	16	25	7.5	18.5	183	450	12	200	14.2
BM-AX1FU-16-0150-024	150	16	12	1.5	7	330	5290	9.4	145	15.8
BM-AX1FU-16-0150-040	150	16	20	3.5	12	202	1090	14	180	16.4

# INDUSTRIAL HOSES - compensators

## Steel compensators - AX1FU

code	DN	working pressure [bar]	movement			spring rate			overall length [mm]	weight [kg]
			axial [± mm]	lateral [± mm]	angular [± °]	axial [N/mm]	lateral [N/mm]	angular [Nm/°]		
PN 16										
BM-AX1FU-16-0150-063	150	16	31.5	9.5	19.5	247	500	21	245	19.4
BM-AX1FU-16-0200-032	200	16	16	1.5	7.5	393	8190	17	155	21.7
BM-AX1FU-16-0200-060	200	16	30	6	14.5	206	1030	28	220	23.4
BM-AX1FU-16-0200-075	200	16	37.5	12.5	18	278	597	46	315	29.7
BM-AX1FU-16-0250-034	250	16	17	2	6.5	269	4860	33	200	29.7
BM-AX1FU-16-0250-059	250	16	29.5	4.5	11.5	218	1890	43	235	33.1
BM-AX1FU-16-0250-080	250	16	40	12	15.5	282	895	74	335	41.
BM-AX1FU-16-0300-028	300	16	14	0.5	4.5	469	27100	36	175	40.6
BM-AX1FU-16-0300-063	300	16	31.5	4	10.5	282	3920	55	230	44.9
BM-AX1FU-16-0300-89	300	16	44.5	10	14.5	259	1270	96	320	55.
PN 25										
BM-AX1FU-25-0050-015	50	25	7.5	3	14	130	167	1.6	125	5.2
BM-AX1FU-25-0050-022	50	25	11	8.5	21.5	222	104	2.6	180	5.5
BM-AX1FU-25-0065-016	65	25	8	3	12	150	268	2.6	135	6.7
BM-AX1FU-25-0065-029	65	25	14.5	12	22.5	270	112	5.4	230	7.7
BM-AX1FU-25-0080-020	80	25	10	2.5	11.5	191	612	4.3	145	8.7
BM-AX1FU-25-0080-031	80	25	15.5	6.5	18	241	288	6.7	195	9.6
BM-AX1FU-25-0100-023	100	25	11.5	2	10	266	1850	6	140	12.5
BM-AX1FU-25-0100-036	100	25	18	6	16.5	230	474	11	195	12.9
BM-AX1FU-25-0125-028	125	25	14	2.5	10.5	223	1240	13	170	17.3
BM-AX1FU-25-0125-043	125	25	21.5	6	16	279	716	17	210	19.4
BM-AX1FU-25-0150-025	150	25	12.5	1.5	7.5	452	5610	16	175	21.4
BM-AX1FU-25-0150-047	150	25	23.5	6.5	14.5	321	900	28	240	23.3
BM-AX1FU-25-0200-027	200	25	13.5	1	6.5	585	12300	26	170	31.3
BM-AX1FU-25-0200-051	200	25	25.5	4.5	12	313	1720	41	225	32.2
BM-AX1FU-25-0200-060	200	25	30	8.5	14.5	352	1040	60	290	36.9
BM-AX1FU-25-0250-024	250	25	12	1	4.5	718	24000	41	180	42.7
BM-AX1FU-25-0250-046	250	25	23	3.5	9	372	3740	62	230	46.6
BM-AX1FU-25-0250-063	250	25	31.5	7	12	358	1670	92	305	50.7
BM-AX1FU-25-0300-030	300	25	15	1	5	622	19800	65	200	57.9
BM-AX1FU-25-0300-048	300	25	24	3.5	8	389	4480	97	255	59.9
BM-AX1FU-25-0300-065	300	25	32.5	5.5	10.5	358	2820	114	280	64.9

# INDUSTRIAL HOSES - compensators

## Steel compensators



### LA1ST

**Fittings type:** Weld ends  
**Bellow material:** AISI 321 (1.4541)  
**Fittings material:** Carbon steel (1.0345)  
**Working temp.:** Up to +400°C  
**Working press.:** Up to 6; 10; 16; 25 bar  
 (depending on version)

Apply a correction factor for working temperatures above +20°C.

Lateral compensator with weld ends, intended for application in pipe systems to absorb lateral movement. Designed for a service life of at least 1000 full displacement cycles (at +20°C).

code	DN	working pressure [bar]	lateral movement [± mm]	weld ends diameter x thickness [mm]	lateral spring rate [N/mm]	overall length [mm]	weight [kg]
PN 6							
BM-LA1ST-06-0050-016	50	6	8	60.3 x 2.9	26	355	3.4
BM-LA1ST-06-0050-043	50	6	21.5	60.3 x 2.9	7.5	455	4
BM-LA1ST-06-0065-012	65	6	6	76.1 x 2.9	51	335	3.1
BM-LA1ST-06-0065-032	65	6	16	76.1 x 2.9	18	400	3.8
BM-LA1ST-06-0080-006	80	6	3	88.9 x 3.2	230	305	4.8
BM-LA1ST-06-0080-015	80	6	7.5	88.9 x 3.2	45	350	5
BM-LA1ST-06-0080-033	80	6	16.5	88.9 x 3.2	26	415	6.1
BM-LA1ST-06-0100-006	100	6	3	114.3 x 3.6	297	315	6.2
BM-LA1ST-06-0100-016	100	6	8	114.3 x 3.6	91	355	6.5
BM-LA1ST-06-0100-039	100	6	19.5	114.3 x 3.6	39	445	9
BM-LA1ST-06-0125-005	125	6	2.5	139.7 x 4.0	481	315	8.5
BM-LA1ST-06-0125-016	125	6	8	139.7 x 4.0	104	365	9.5
BM-LA1ST-06-0125-040	125	6	20	139.7 x 4.0	48	470	12.6
BM-LA1ST-06-0150-006	150	6	3	168.3 x 4.5	540	335	10.5
BM-LA1ST-06-0150-021	150	6	10.5	168.3 x 4.5	134	420	13
BM-LA1ST-06-0150-050	150	6	25	168.3 x 4.5	58	525	17.5
BM-LA1ST-06-0200-007	200	6	3.5	219.1 x 6.3	476	350	16.8
BM-LA1ST-06-0200-022	200	6	11	219.1 x 6.3	151	435	19.8
BM-LA1ST-06-0200-039	200	6	19.5	219.1 x 6.3	117	485	24
BM-LA1ST-06-0250-005	250	6	2.5	273.0 x 6.3	973	370	27
BM-LA1ST-06-0250-019	250	6	9.5	273.0 x 6.3	256	455	30.2
BM-LA1ST-06-0250-033	250	6	16.5	273.0 x 6.3	141	545	36.4
BM-LA1ST-06-0300-005	300	6	2.5	323.9 x 7.1	1810	410	55.8
BM-LA1ST-06-0300-012	300	6	6	323.9 x 7.1	458	455	56.7
BM-LA1ST-06-0300-024	300	6	12	323.9 x 7.1	294	515	62
PN 10							
BM-LA1ST-10-0050-010	50	10	5	60.3 x 2.9	53	335	3.4
BM-LA1ST-10-0050-025	50	10	12.5	60.3 x 2.9	18	405	4
BM-LA1ST-10-0065-009	65	10	4.5	76.1 x 2.9	83	325	3.2
BM-LA1ST-10-0065-021	65	10	10.5	76.1 x 2.9	29	390	3.7
BM-LA1ST-10-0080-006	80	10	3	88.9 x 3.2	210	310	4.8
BM-LA1ST-10-0080-026	80	10	13	88.9 x 3.2	63	385	6.1
BM-LA1ST-10-0100-006	100	10	3	114.3 x 3.6	420	320	6.5
BM-LA1ST-10-0100-012	100	10	6	114.3 x 3.6	126	355	6.8
BM-LA1ST-10-0100-030	100	10	15	114.3 x 3.6	61	445	9
BM-LA1ST-10-0125-004	125	10	2	139.7 x 4.0	564	315	8.2
BM-LA1ST-10-0125-011	125	10	5.5	139.7 x 4.0	185	355	9.1
BM-LA1ST-10-0125-025	125	10	12.5	139.7 x 4.0	98	430	11.9



# INDUSTRIAL HOSES - compensators

## Steel compensators - LA1ST

code	DN	working pressure [bar]	lateral movement [± mm]	weld ends diameter x thickness [mm]	lateral spring rate [N/mm]	overall length [mm]	weight [kg]
PN 10							
BM-LA1ST-10-0150-003	150	10	1.5	168.3 x 4.5	2180	330	13.2
BM-LA1ST-10-0150-015	150	10	7.5	168.3 x 4.5	189	415	14.7
BM-LA1ST-10-0150-031	150	10	15.5	168.3 x 4.5	101	510	16.5
BM-LA1ST-10-0200-004	200	10	2	219.1 x 6.3	2250	380	25.7
BM-LA1ST-10-0200-012	200	10	6	219.1 x 6.3	382	425	26.3
BM-LA1ST-10-0200-024	200	10	12	219.1 x 6.3	222	490	31.5
BM-LA1ST-10-0250-003	250	10	1.5	273.0 x 6.3	4020	360	27.7
BM-LA1ST-10-0250-010	250	10	5	273.0 x 6.3	663	405	29.2
BM-LA1ST-10-0250-023	250	10	11.5	273.0 x 6.3	310	490	37.1
BM-LA1ST-10-0300-003	300	10	1.5	323.9 x 7.1	5060	400	57
BM-LA1ST-10-0300-014	300	10	7	323.9 x 7.1	580	485	60.5
BM-LA1ST-10-0300-026	300	10	13	323.9 x 7.1	388	555	70.1
PN 16							
BM-LA1ST-16-0050-009	50	16	4.5	60.3 x 2.9	57	335	3.4
BM-LA1ST-16-0050-025	50	16	12.5	60.3 x 2.9	26	415	4.2
BM-LA1ST-16-0065-008	65	16	4	76.1 x 2.9	91	325	3.2
BM-LA1ST-16-0065-024	65	16	12	76.1 x 2.9	43	400	4.1
BM-LA1ST-16-0080-005	80	16	2.5	88.9 x 3.2	238	310	4.8
BM-LA1ST-16-0080-019	80	16	9.5	88.9 x 3.2	82	385	6.1
BM-LA1ST-16-0100-006	100	16	3	114.3 x 3.6	420	320	6
BM-LA1ST-16-0100-013	100	16	6.5	114.3 x 3.6	187	365	7.6
BM-LA1ST-16-0125-002	125	16	1	139.7 x 4.0	2030	305	8.8
BM-LA1ST-16-0125-009	125	16	4.5	139.7 x 4.0	365	345	9.3
BM-LA1ST-16-0125-014	125	16	7	139.7 x 4.0	224	380	11.2
BM-LA1ST-16-0150-003	150	16	1.5	168.3 x 4.5	2900	335	13.9
BM-LA1ST-16-0150-007	150	16	3.5	168.3 x 4.5	659	365	13.9
BM-LA1ST-16-0150-017	150	16	8.5	168.3 x 4.5	279	425	17.3
BM-LA1ST-16-0200-003	200	16	1.5	219.1 x 6.3	5540	365	26.5
BM-LA1ST-16-0200-011	200	16	5.5	219.1 x 6.3	571	430	28.4
BM-LA1ST-16-0200-024	200	16	12	219.1 x 6.3	298	520	35.3
BM-LA1ST-16-0250-004	250	16	2	273.0 x 6.3	2720	405	57.3
BM-LA1ST-16-0250-010	250	16	5	273.0 x 6.3	931	440	60.4
BM-LA1ST-16-0250-022	250	16	11	273.0 x 6.3	424	550	69.1
BM-LA1ST-16-0300-002	300	16	1	323.9 x 7.1	15200	415	70.8
BM-LA1ST-16-0300-008	300	16	4	323.9 x 7.1	1960	470	75.4
BM-LA1ST-16-0300-018	300	16	9	323.9 x 7.1	640	570	81.3
PN 25							
BM-LA1ST-25-0050-006	50	25	3	60.3 x 4.0	94	325	3.7
BM-LA1ST-25-0050-016	50	25	8	60.3 x 4.0	52	380	4.2
BM-LA1ST-25-0065-006	65	25	3	76.1 x 4.0	133	325	3.7
BM-LA1ST-25-0065-021	65	25	10.5	76.1 x 4.0	59	415	4.9
BM-LA1ST-25-0080-005	80	25	2.5	88.9 x 4.0	374	310	5.4
BM-LA1ST-25-0080-012	80	25	6	88.9 x 4.0	156	360	6.3
BM-LA1ST-25-0100-004	100	25	2	114.3 x 4.0	1090	330	9.9
BM-LA1ST-25-0100-010	100	25	5	114.3 x 4.0	268	385	10.4
BM-LA1ST-25-0125-005	125	25	2.5	139.7 x 4.0	759	365	22.5
BM-LA1ST-25-0125-012	125	25	6	139.7 x 4.0	362	405	24.9
BM-LA1ST-25-0150-003	150	25	1.5	168.3 x 4.5	3780	375	36.6
BM-LA1ST-25-0150-012	150	25	6	168.3 x 4.5	487	450	39.6
BM-LA1ST-25-0200-003	200	25	1.5	219.1 x 6.3	6730	380	47.9
BM-LA1ST-25-0200-009	200	25	4.5	219.1 x 6.3	999	430	50.5
BM-LA1ST-25-0250-002	250	25	1	273.0 x 7.1	14500	380	60.1
BM-LA1ST-25-0250-007	250	25	3.5	273.0 x 7.1	1890	435	63.3
BM-LA1ST-25-0250-013	250	25	6.5	273.0 x 7.1	883	495	68.2
BM-LA1ST-25-0300-003	300	25	1.5	323.9 x 8	9180	490	105
BM-LA1ST-25-0300-007	300	25	3.5	323.9 x 8	2260	540	108
BM-LA1ST-25-0300-011	300	25	5.5	323.9 x 8	1420	565	113

# INDUSTRIAL HOSES - compensators

## Steel compensators



### LA1BT

**Fittings type:** Swivel flanges EN 1092-1  
**Bellow material:** AISI 321 (1.4541)  
**Fittings material:** Carbon steel (1.0425)  
**Working temp.:** Up to +400°C  
**Working press.:** Up to 6; 10; 16; 25 bar  
 (depending on version)

Apply a correction factor for working temperatures above +20°C.

Lateral compensator with swivel flanges, intended for application in pipe systems to absorb lateral movement. Designed for a service life of at least 1000 full displacement cycles (at +20°C).

code	DN	working pressure [bar]	lateral movement [± mm]	lateral spring rate [N/mm]	overall length [mm]	weight [kg]
PN 6						
BM-LA1BT-06-0050-016	50	6	8	27	155	5.6
BM-LA1BT-06-0050-043	50	6	21.5	7.5	255	6.5
BM-LA1BT-06-0065-012	65	6	6	52	145	6.5
BM-LA1BT-06-0065-032	65	6	16	17	215	7.1
BM-LA1BT-06-0080-006	80	6	3	224	145	8.4
BM-LA1BT-06-0080-015	80	6	7.5	45	190	8.8
BM-LA1BT-06-0080-033	80	6	16.5	27	255	9.9
BM-LA1BT-06-0100-006	100	6	3	286	155	9.2
BM-LA1BT-06-0100-016	100	6	8	91	195	10.
BM-LA1BT-06-0100-039	100	6	19.5	39	280	12.2
BM-LA1BT-06-0125-005	125	6	2.5	463	165	13.4
BM-LA1BT-06-0125-016	125	6	8	108	215	14.4
BM-LA1BT-06-0125-040	125	6	20	48	315	17.7
BM-LA1BT-06-0150-005	150	6	2.5	640	180	14.6
BM-LA1BT-06-0150-021	150	6	10.5	136	260	16.9
BM-LA1BT-06-0150-050	150	6	25	58	370	21.4
BM-LA1BT-06-0200-007	200	6	3.5	492	185	18.7
BM-LA1BT-06-0200-022	200	6	11	153	275	22.1
BM-LA1BT-06-0200-039	200	6	19.5	117	330	26.8
BM-LA1BT-06-0250-005	250	6	2.5	1030	185	21.9
BM-LA1BT-06-0250-019	250	6	9.5	259	275	26.1
BM-LA1BT-06-0250-033	250	6	16.5	141	370	31.3
BM-LA1BT-06-0300-005	300	6	2.5	1750	210	36.8
BM-LA1BT-06-0300-012	300	6	6	451	245	38.
BM-LA1BT-06-0300-024	300	6	12	290	310	44.9
PN 10						
BM-LA1BT-10-0050-011	50	10	5.5	47	140	7.5
BM-LA1BT-10-0050-025	50	10	12.5	18	205	8.1
BM-LA1BT-10-0065-009	65	10	4.5	83	145	9.9
BM-LA1BT-10-0065-021	65	10	10.5	29	215	10.5
BM-LA1BT-10-0080-005	80	10	2.5	270	155	11.1
BM-LA1BT-10-0080-026	80	10	13	63	240	12.6
BM-LA1BT-10-0100-006	100	10	3	434	160	12.7
BM-LA1BT-10-0100-012	100	10	6	129	195	13.
BM-LA1BT-10-0100-030	100	10	15	60	295	15.4
BM-LA1BT-10-0125-004	125	10	2	564	155	14.6
BM-LA1BT-10-0125-011	125	10	5.5	190	195	15.4
BM-LA1BT-10-0125-025	125	10	12.5	95	280	18.2
BM-LA1BT-10-0150-003	150	10	1.5	2180	170	21.1

# INDUSTRIAL HOSES - compensators

## Steel compensators - LA1BT

code	DN	working pressure [bar]	lateral movement [± mm]	lateral spring rate [N/mm]	overall length [mm]	weight [kg]
PN 10						
BM-LA1BT-10-0150-015	150	10	7.5	193	255	23.
BM-LA1BT-10-0150-031	150	10	15.5	104	350	25.
BM-LA1BT-10-0200-004	200	10	2	2380	190	27.5
BM-LA1BT-10-0200-012	200	10	6	389	235	28.9
BM-LA1BT-10-0200-024	200	10	12	222	305	33.1
BM-LA1BT-10-0250-003	250	10	1.5	4140	190	34.3
BM-LA1BT-10-0250-010	250	10	5	673	235	35.5
BM-LA1BT-10-0250-023	250	10	11.5	310	325	42.6
BM-LA1BT-10-0300-003	300	10	1.5	5230	190	39.5
BM-LA1BT-10-0300-014	300	10	7	597	275	44.5
BM-LA1BT-10-0300-026	300	10	13	386	355	55.6
PN 16						
BM-LA1BT-16-0050-009	50	16	4.5	55	140	7.5
BM-LA1BT-16-0050-025	50	16	12.5	27	215	8.3
BM-LA1BT-16-0065-008	65	16	4	91	145	9.9
BM-LA1BT-16-0065-024	65	16	12	43	220	11.1
BM-LA1BT-16-0080-005	80	16	2.5	270	155	11.1
BM-LA1BT-16-0080-019	80	16	9.5	82	240	12.6
BM-LA1BT-16-0100-006	100	16	3	434	160	12.7
BM-LA1BT-16-0100-013	100	16	6.5	187	210	13.8
BM-LA1BT-16-0125-002	125	16	1	1910	150	14.7
BM-LA1BT-16-0125-009	125	16	4.5	354	190	16.
BM-LA1BT-16-0125-014	125	16	7	224	225	17.5
BM-LA1BT-16-0150-003	150	16	1.5	2990	175	21.6
BM-LA1BT-16-0150-007	150	16	3.5	680	205	22.2
BM-LA1BT-16-0150-017	150	16	8.5	270	275	25.
BM-LA1BT-16-0200-003	200	16	1.5	5340	180	29.3
BM-LA1BT-16-0200-011	200	16	5.5	564	245	31.2
BM-LA1BT-16-0200-024	200	16	12	295	340	38.1
BM-LA1BT-16-0250-004	250	16	2	2720	215	39.5
BM-LA1BT-16-0250-010	250	16	5	919	255	42.5
BM-LA1BT-16-0250-022	250	16	11	424	360	51.
BM-LA1BT-16-0300-002	300	16	1	14700	200	53.7
BM-LA1BT-16-0300-008	300	16	4	1990	255	58.6
BM-LA1BT-16-0300-018	300	16	9	655	345	69.3
PN 25						
BM-LA1BT-25-0050-006	50	25	3	88	140	8.5
BM-LA1BT-25-0050-016	50	25	8	50	195	9.4
BM-LA1BT-25-0065-006	65	25	3	142	140	9.9
BM-LA1BT-25-0065-021	65	25	10.5	59	235	11.3
BM-LA1BT-25-0080-006	80	25	3	301	165	11.5
BM-LA1BT-25-0080-012	80	25	6	156	215	12.4
BM-LA1BT-25-0100-004	100	25	2	1030	165	17.3
BM-LA1BT-25-0100-010	100	25	5	268	220	18.1
BM-LA1BT-25-0125-006	125	25	3	647	190	21.4
BM-LA1BT-25-0125-012	125	25	6	375	230	23.7
BM-LA1BT-25-0150-003	150	25	1.5	3780	200	30.4
BM-LA1BT-25-0150-012	150	25	6	492	265	33.2
BM-LA1BT-25-0200-003	200	25	1.5	6930	195	41.4
BM-LA1BT-25-0200-009	200	25	4.5	949	250	44.1
BM-LA1BT-25-0250-002	250	25	1	14500	195	55.7
BM-LA1BT-25-0250-007	250	25	3.5	1890	250	59.1
BM-LA1BT-25-0250-013	250	25	6.5	912	320	64.1
BM-LA1BT-25-0300-003	300	25	1.5	9180	225	80.6
BM-LA1BT-25-0300-007	300	25	3.5	2310	275	83.4
BM-LA1BT-25-0300-011	300	25	5.5	1470	300	88.8

# INDUSTRIAL HOSES - compensators

## Steel compensators



### LA1FT

**Fittings type:** Fixed flanges EN 1092-1  
**Bellow material:** AISI 321 (1.4541)  
**Fittings material:** Carbon steel (1.0425)  
**Working temp.:** Up to +400°C  
**Working press.:** Up to 6; 10; 16; 25 bar  
 (depending on version)

Apply a correction factor for working temperatures above +20°C.

Lateral compensator with fixed flanges, intended for application in pipe systems to absorb lateral movement. Designed for a service life of at least 1000 full displacement cycles (at +20°C).

code	DN	working pressure [bar]	lateral movement [± mm]	lateral spring rate [N/mm]	overall length [mm]	weight [kg]
PN 6						
BM-LA1FT-06-0050-017	50	6	8.5	25	150	5.6
BM-LA1FT-06-0050-043	50	6	21.5	7.6	245	6.4
BM-LA1FT-06-0065-012	65	6	6	50	140	6.4
BM-LA1FT-06-0065-032	65	6	16	17	205	7.1
BM-LA1FT-06-0080-006	80	6	3	224	125	8.4
BM-LA1FT-06-0080-015	80	6	7.5	44	170	8.8
BM-LA1FT-06-0080-033	80	6	16.5	26	235	9.9
BM-LA1FT-06-0100-006	100	6	3	275	135	9.2
BM-LA1FT-06-0100-016	100	6	8	91	175	10.
BM-LA1FT-06-0100-039	100	6	19.5	39	255	12.2
BM-LA1FT-06-0125-005	125	6	2.5	446	145	13.2
BM-LA1FT-06-0125-016	125	6	8	104	195	14.
BM-LA1FT-06-0125-040	125	6	20	47	295	17.
BM-LA1FT-06-0150-005	150	6	2.5	640	160	14.6
BM-LA1FT-06-0150-021	150	6	10.5	133	240	19.6
BM-LA1FT-06-0150-050	150	6	25	59	344	21.2
BM-LA1FT-06-0200-007	200	6	3.5	492	165	18.4
BM-LA1FT-06-0200-022	200	6	11	157	250	22.1
BM-LA1FT-06-0200-039	200	6	19.5	119	305	26.8
BM-LA1FT-06-0250-005	250	6	2.5	1010	165	21.9
BM-LA1FT-06-0250-019	250	6	9.5	266	250	26.1
BM-LA1FT-06-0250-033	250	6	16.5	138	350	31.3
BM-LA1FT-06-0300-005	300	6	2.5	1690	190	36.3
BM-LA1FT-06-0300-012	300	6	6	445	225	38.
BM-LA1FT-06-0300-024	300	6	12	294	285	44.9
PN 10						
BM-LA1FT-10-0050-010	50	10	5	53	130.	7.5
BM-LA1FT-10-0050-025	50	10	12.5	18	200.	8.1
BM-LA1FT-10-0065-009	65	10	4.5	80	140.	9.9
BM-LA1FT-10-0065-021	65	10	10.5	29	205.	10.5
BM-LA1FT-10-0080-005	80	10	2.5	263	135.	11.1
BM-LA1FT-10-0080-025	80	10	12.5	66	215.	12.4
BM-LA1FT-10-0100-006	100	10	3	406	140.	12.3
BM-LA1FT-10-0100-012	100	10	6	126	175.	13.
BM-LA1FT-10-0100-030	100	10	15	60	270.	14.7
BM-LA1FT-10-0125-005	125	10	2.5	458	135.	14.6
BM-LA1FT-10-0125-011	125	10	5.5	185	175.	15.2
BM-LA1FT-10-0125-025	125	10	12.5	96	255.	17.5
BM-LA1FT-10-0150-003	150	10	1.5	2050	150.	20.9

# INDUSTRIAL HOSES - compensators

## Steel compensators - LA1FT

code	DN	working pressure [bar]	lateral movement [± mm]	lateral spring rate [N/mm]	overall length [mm]	weight [kg]
PN 10						
BM-LA1FT-10-0150-015	150	10	7.5	198	230.	23.
BM-LA1FT-10-0150-031	150	10	15.5	102	330.	25.
BM-LA1FT-10-0200-004	200	10	2	2250	170.	27.1
BM-LA1FT-10-0200-012	200	10	6	382	215.	28.7
BM-LA1FT-10-0200-024	200	10	12	217	285.	33.1
BM-LA1FT-10-0250-003	250	10	1.5	4020	170.	33.3
BM-LA1FT-10-0250-010	250	10	5	663	215.	35.5
BM-LA1FT-10-0250-023	250	10	11.5	314	300.	42.6
BM-LA1FT-10-0300-003	300	10	1.5	5420	165.	39.5
BM-LA1FT-10-0300-014	300	10	7	588	255.	44.5
BM-LA1FT-10-0300-026	300	10	13	386	330.	55.3
PN 16						
BM-LA1FT-16-0050-009	50	16	4.5	57	130	7.5
BM-LA1FT-16-0050-025	50	16	12.5	26	210	8.3
BM-LA1FT-16-0065-008	65	16	4	87	140	9.9
BM-LA1FT-16-0065-024	65	16	12	42	215	11.1
BM-LA1FT-16-0080-005	80	16	2.5	263	135	11.1
BM-LA1FT-16-0080-019	80	16	9.5	83	215	12.4
BM-LA1FT-16-0100-006	100	16	3	406	140	12.3
BM-LA1FT-16-0100-013	100	16	6.5	179	190	13.5
BM-LA1FT-16-0125-002	125	16	1	2030	125	14.6
BM-LA1FT-16-0125-009	125	16	4.5	365	165	15.7
BM-LA1FT-16-0125-014	125	16	7	230	200	17.3
BM-LA1FT-16-0150-003	150	16	1.5	2820	155	21.
BM-LA1FT-16-0150-008	150	16	4	585	185	21.8
BM-LA1FT-16-0150-017	150	16	8.5	273	250	25.
BM-LA1FT-16-0200-003	200	16	1.5	5540	155	29.1
BM-LA1FT-16-0200-011	200	16	5.5	542	225	31.2
BM-LA1FT-16-0200-024	200	16	12	295	315	37.9
BM-LA1FT-16-0250-004	250	16	2	2660	195	38.5
BM-LA1FT-16-0250-010	250	16	5	885	235	42.2
BM-LA1FT-16-0250-022	250	16	11	424	335	51.
BM-LA1FT-16-0300-002	300	16	1	15200	175	53.7
BM-LA1FT-16-0300-008	300	16	4	2020	230	58.3
BM-LA1FT-16-0300-018	300	16	9	655	320	69.
PN 25						
BM-LA1FT-25-0050-006	50	25	3	94	130	8.8
BM-LA1FT-25-0050-016	50	25	8	51	185	9.3
BM-LA1FT-25-0065-006	65	25	3	142	135	9.9
BM-LA1FT-25-0065-021	65	25	10.5	59	230	11.3
BM-LA1FT-25-0080-005	80	25	2.5	374	140	11.3
BM-LA1FT-25-0080-012	80	25	6	159	190	12.4
BM-LA1FT-25-0100-004	100	25	2	1130	140	17.1
BM-LA1FT-25-0100-010	100	25	5	263	200	17.7
BM-LA1FT-25-0125-005	125	25	2.5	780	165	21.4
BM-LA1FT-25-0125-012	125	25	6	357	210	23.5
BM-LA1FT-25-0150-003	150	25	1.5	3900	175	29.9
BM-LA1FT-25-0150-012	150	25	6	473	245	32.2
BM-LA1FT-25-0200-003	200	25	1.5	6930	170	41.4
BM-LA1FT-25-0200-009	200	25	4.5	961	225	42.7
BM-LA1FT-25-0250-002	250	25	1	13200	175	54.6
BM-LA1FT-25-0250-007	250	25	3.5	1940	225	59.1
BM-LA1FT-25-0250-013	250	25	6.5	912	295	63.8
BM-LA1FT-25-0300-003	300	25	1.5	9390	200	80.6
BM-LA1FT-25-0300-007	300	25	3.5	2220	255	83.4
BM-LA1FT-25-0300-011	300	25	5.5	1470	275	88.4

# INDUSTRIAL HOSES - compensators

## Steel compensators



### AN1SH

**Fittings type:** Weld ends  
**Bellow material:** AISI 321 (1.4541)  
**Fittings material:** Carbon steel (1.0345)  
**Working temp.:** Up to +400°C  
**Working press.:** Up to 6; 10; 16; bar  
 (depending on version)

Apply a correction factor for working temperatures above +20°C.

Angular compensator with weld ends, intended for application in pipe systems to absorb angular movement in one plane. Designed for a service life of at least 1000 full displacement cycles (at +20°C).

code	DN	working pressure [bar]	angular movement [± °]	weld ends diameter x thickness [mm]	angular spring rate [N/°]	overall length [mm]	weight [kg]
PN 6							
BM-AN1SH-06-0050-048	50	6	24	60.3 x 2.9	0.7	355	6.2
BM-AN1SH-06-0050-050	50	6	25	60.3 x 2.9	1.4	455	7.1
BM-AN1SH-06-0065-040	65	6	20	76.1 x 2.9	1.1	345	7.4
BM-AN1SH-06-0065-050	65	6	25	76.1 x 2.9	1.9	410	8.2
BM-AN1SH-06-0080-031	80	6	15.5	88.9 x 3.2	1.5	305	8
BM-AN1SH-06-0080-044	80	6	22	88.9 x 3.2	2.1	350	8.4
BM-AN1SH-06-0100-030	100	6	15	114.3 x 3.6	2.5	315	10.7
BM-AN1SH-06-0100-044	100	6	22	114.3 x 3.6	4.1	355	11.3
BM-AN1SH-06-0125-025	125	6	12.5	139.7 x 4.0	3.5	325	16.7
BM-AN1SH-06-0125-041	125	6	20.5	139.7 x 4.0	6.3	375	18.1
BM-AN1SH-06-0150-024	150	6	12	168.3 x 4.5	5.7	335	20.1
BM-AN1SH-06-0150-039	150	6	19.5	168.3 x 4.5	13	420	23.1
BM-AN1SH-06-0200-023	200	6	11.5	219.1 x 6.3	11	360	35.8
BM-AN1SH-06-0200-037	200	6	18.5	219.1 x 6.3	22	445	39.8
BM-AN1SH-06-0250-017	250	6	8.5	273.0 x 6.3	16	350	37.2
BM-AN1SH-06-0250-031	250	6	15.5	273.0 x 6.3	33	435	41.3
BM-AN1SH-06-0300-019	300	6	9.5	323.9 x 7.1	28	390	53.7
BM-AN1SH-06-0300-025	300	6	12.5	323.9 x 7.1	35	435	55.2
BM-AN1SH-06-0300-035	300	6	17.5	323.9 x 7.1	57	495	61
PN 10							
BM-AN1SH-10-0050-038	50	10	19	60.3 x 2.9	1	335	6.1
BM-AN1SH-10-0050-050	50	10	25	60.3 x 2.9	1.9	405	6.9
BM-AN1SH-10-0065-032	65	10	16	76.1 x 2.9	1.7	335	7.4
BM-AN1SH-10-0065-049	65	10	24.5	76.1 x 2.9	3	400	8.1
BM-AN1SH-10-0080-026	80	10	13	88.9 x 3.2	2.6	310	8
BM-AN1SH-10-0080-050	80	10	25	88.9 x 3.2	6.4	385	9.5
BM-AN1SH-10-0100-028	100	10	14	114.3 x 3.6	5.5	320	11.1
BM-AN1SH-10-0100-035	100	10	17.5	114.3 x 3.6	6.6	355	11.6
BM-AN1SH-10-0125-021	125	10	10.5	139.7 x 4.0	5.7	325	16.4
BM-AN1SH-10-0125-030	125	10	15	139.7 x 4.0	9.6	365	17.6
BM-AN1SH-10-0150-019	150	10	9.5	168.3 x 4.5	12	320	20.5
BM-AN1SH-10-0150-033	150	10	16.5	168.3 x 4.5	20	405	22.3
BM-AN1SH-10-0200-018	200	10	9	219.1 x 6.3	25	350	37.3
BM-AN1SH-10-0200-027	200	10	13.5	219.1 x 6.3	30	395	38.3
BM-AN1SH-10-0200-039	200	10	19.5	219.1 x 6.3	49	460	44
BM-AN1SH-10-0250-015	250	10	7.5	273.0 x 6.3	37	340	37.8
BM-AN1SH-10-0250-023	250	10	11.5	273.0 x 6.3	45	385	39.7
BM-AN1SH-10-0250-033	250	10	16.5	273.0 x 6.3	79	470	48.5
BM-AN1SH-10-0300-014	300	10	7	323.9 x 7.1	52	380	54.8

# INDUSTRIAL HOSES - compensators

## Steel compensators - AN1SH

code	DN	working pressure [bar]	angular movement [± °]	weld ends diameter x thickness [mm]	angular spring rate [N/°]	overall length [mm]	weight [kg]
PN 10							
BM-AN1SH-10-0300-026	300	10	13	323.9 x 7.1	86	465	59.1
BM-AN1SH-10-0300-034	300	10	17	323.9 x 7.1	131	535	69.4
PN 16							
BM-AN1SH-16-0050-034	50	16	17	60.3 x 2.9	1.6	335	6.1
BM-AN1SH-16-0050-050	50	16	25	60.3 x 2.9	3.5	415	7.1
BM-AN1SH-16-0065-028	65	16	14	76.1 x 2.9	2.6	335	7.4
BM-AN1SH-16-0065-050	65	16	25	76.1 x 2.9	6.4	410	8.5
BM-AN1SH-16-0080-022	80	16	11	88.9 x 3.2	4	310	8.
BM-AN1SH-16-0080-046	80	16	23	88.9 x 3.2	11	385	9.5
BM-AN1SH-16-0100-024	100	16	12	114.3 x 3.6	8.5	320	11.1
BM-AN1SH-16-0100-037	100	16	18.5	114.3 x 3.6	15	365	12.4
BM-AN1SH-16-0125-015	125	16	7.5	139.7 x 4.0	9.4	315	16.7
BM-AN1SH-16-0125-026	125	16	13	139.7 x 4.0	17	355	17.7
BM-AN1SH-16-0125-032	125	16	16	139.7 x 4.0	24	390	19.7
BM-AN1SH-16-0150-016	150	16	8	168.3 x 4.5	22	325	21.1
BM-AN1SH-16-0150-023	150	16	11.5	168.3 x 4.5	25	355	21.3
BM-AN1SH-16-0150-035	150	16	17.5	168.3 x 4.5	43	415	25.
BM-AN1SH-16-0200-016	200	16	8	219.1 x 6.3	46	335	37.9
BM-AN1SH-16-0200-025	200	16	12.5	219.1 x 6.3	57	400	40.5
BM-AN1SH-16-0200-033	200	16	16.5	219.1 x 6.3	93	490	48.
BM-AN1SH-16-0250-014	250	16	7	273.0 x 6.3	61	375	57.9
BM-AN1SH-16-0250-021	250	16	10.5	273.0 x 6.3	87	410	61.4
BM-AN1SH-16-0250-028	250	16	14	273.0 x 6.3	148	520	71.9
BM-AN1SH-16-0300-010	300	16	5	323.9 x 7.1	98	385	88.7
BM-AN1SH-16-0300-020	300	16	10	323.9 x 7.1	139	440	94.5
BM-AN1SH-16-0300-026	300	16	13	323.9 x 7.1	200	540	103.

# INDUSTRIAL HOSES - compensators

## Steel compensators



### AN1BH

**Fittings type:** Swivel flanges EN 1092-1  
**Bellow material:** AISI 321 (1.4541)  
**Fittings material:** Carbon steel (1.0425)  
**Working temp.:** Up to +400°C  
**Working press.:** Up to 6; 10; 16 bar  
 (depending on version)

Apply a correction factor for working temperatures above +20°C.

Angular compensator with swivel flanges, intended for application in pipe systems to absorb angular movement in one plane. Designed for a service life of at least 1000 full displacement cycles (at +20°C).

code	DN	working pressure [bar]	angular movement [± °]	angular spring rate [N/°]	overall length [mm]	weight [kg]
PN 6						
BM-AN1BH-06-0050-049	50	6	24.5	0.7	155	7.7
BM-AN1BH-06-0050-050	50	6	25	1.4	255	8.8
BM-AN1BH-06-0065-040	65	6	20	1.1	145	8.7
BM-AN1BH-06-0065-050	65	6	25	2	215	9.5
BM-AN1BH-06-0080-031	80	6	15.5	1.5	145	10.3
BM-AN1BH-06-0080-044	80	6	22	2.1	190	10.7
BM-AN1BH-06-0100-030	100	6	15	2.5	155	11.7
BM-AN1BH-06-0100-044	100	6	22	4.1	195	12.5
BM-AN1BH-06-0125-025	125	6	12.5	3.6	155	13.5
BM-AN1BH-06-0125-041	125	6	20.5	6.2	205	14.8
BM-AN1BH-06-0150-024	150	6	12	5.6	170	16.4
BM-AN1BH-06-0150-039	150	6	19.5	13	250	19.2
BM-AN1BH-06-0200-023	200	6	11.5	11	185	23.9
BM-AN1BH-06-0200-037	200	6	18.5	22	275	27.8
BM-AN1BH-06-0250-017	250	6	8.5	16	185	30.4
BM-AN1BH-06-0250-031	250	6	15.5	33	275	35.7
BM-AN1BH-06-0300-019	300	6	9.5	29	200	43.1
BM-AN1BH-06-0300-035	300	6	17.5	57	300	52.9
PN 10						
BM-AN1BH-10-0050-038	50	10	19	1	145	10.8
BM-AN1BH-10-0050-050	50	10	25	1.9	215	11.5
BM-AN1BH-10-0065-032	65	10	16	1.7	145	12.
BM-AN1BH-10-0065-049	65	10	24	3	215	12.7
BM-AN1BH-10-0080-027	80	10	13.5	2.4	155	13.2
BM-AN1BH-10-0080-050	80	10	25	6.4	240	14.8
BM-AN1BH-10-0100-029	100	10	14.5	5.4	160	15.4
BM-AN1BH-10-0100-035	100	10	17.5	6.5	195	15.9
BM-AN1BH-10-0125-030	125	10	15	9.5	195	18.6
BM-AN1BH-10-0125-042	125	10	21	18	280	21.6
BM-AN1BH-10-0150-019	150	10	9.5	12	160	22.2
BM-AN1BH-10-0150-033	150	10	16.5	19	245	24.6
BM-AN1BH-10-0200-027	200	10	13.5	29	225	28.7
BM-AN1BH-10-0200-039	200	10	19.5	49	295	33.3
BM-AN1BH-10-0250-023	250	10	11.5	45	235	42.7
BM-AN1BH-10-0250-033	250	10	16.5	79	325	50.6
BM-AN1BH-10-0300-014	300	10	7	51	190	52.2
BM-AN1BH-10-0300-026	300	10	13	85	275	58.9



# INDUSTRIAL HOSES - compensators

## Steel compensators - AN1BH

code	DN	working pressure [bar]	angular movement [± °]	angular spring rate [N/°]	overall length [mm]	weight [kg]
PN 16						
BM-AN1BH-16-0050-034	50	16	17	1.6	145	10.8
BM-AN1BH-16-0050-050	50	16	25	3.4	225	11.8
BM-AN1BH-16-0065-028	65	16	14	2.6	145	12.
BM-AN1BH-16-0065-050	65	16	25	6.4	220	13.4
BM-AN1BH-16-0080-023	80	16	11.5	3.8	155	13.2
BM-AN1BH-16-0080-046	80	16	23	11	240	14.8
BM-AN1BH-16-0100-024	100	16	12	8.5	160	15.4
BM-AN1BH-16-0100-037	100	16	18.5	15	210	16.7
BM-AN1BH-16-0125-026	125	16	13	17	190	19.1
BM-AN1BH-16-0125-032	125	16	16	24	225	20.6
BM-AN1BH-16-0150-023	150	16	11.5	25	195	23.6
BM-AN1BH-16-0150-035	150	16	17.5	44	265	26.8
BM-AN1BH-16-0200-025	200	16	12.5	57	245	34.5
BM-AN1BH-16-0200-033	200	16	16.5	93	340	41.6
BM-AN1BH-16-0250-014	250	16	7	61	225	59.6
BM-AN1BH-16-0250-021	250	16	10.5	87	265	63.3
BM-AN1BH-16-0300-020	300	16	10	138	255	69.
BM-AN1BH-16-0300-026	300	16	13	199	345	81.2

# INDUSTRIAL HOSES - compensators

## Steel compensators



### AN1FH

**Fittings type:** Fixed flanges EN 1092-1  
**Bellow material:** AISI 321 (1.4541)  
**Fittings material:** Carbon steel (1.0425)  
**Working temp.:** Up to +400°C  
**Working press.:** Up to 6; 10; 16 bar  
 (depending on version)

Apply a correction factor for working temperatures above +20°C.

Angular compensator with fixed flanges, intended for application in pipe systems to absorb angular movement in one plane. Designed for a service life of at least 1000 full displacement cycles (at +20°C).

code	DN	working pressure [bar]	angular movement [± °]	angular spring rate [N/°]	overall length [mm]	weight [kg]
PN 6						
BM-AN1FH-06-0050-048	50	6	24	0.8	150	7.7
BM-AN1FH-06-0050-050	50	6	25	1.4	245	8.6
BM-AN1FH-06-0065-040	65	6	20	1.1	140	8.6
BM-AN1FH-06-0065-050	65	6	25	1.9	205	9.5
BM-AN1FH-06-0080-031	80	6	15.5	1.5	125	10.2
BM-AN1FH-06-0080-043	80	6	21.5	2.1	170	10.6
BM-AN1FH-06-0100-030	100	6	15	2.5	135	11.6
BM-AN1FH-06-0100-044	100	6	22	4.1	175	12.4
BM-AN1FH-06-0125-025	125	6	12.5	3.6	135	13.4
BM-AN1FH-06-0125-041	125	6	20.5	6.3	185	14.3
BM-AN1FH-06-0150-024	150	6	12	5.6	150	16.3
BM-AN1FH-06-0150-039	150	6	19.5	13	230	19.
BM-AN1FH-06-0200-023	200	6	11.5	11	165	23.4
BM-AN1FH-06-0200-037	200	6	18.5	21	250	27.6
BM-AN1FH-06-0250-017	250	6	8.5	16	165	30.2
BM-AN1FH-06-0250-031	250	6	15.5	32	250	35.4
BM-AN1FH-06-0300-019	300	6	9.5	29	180	42.2
BM-AN1FH-06-0300-035	300	6	17.5	57	275	52.4
PN 10						
BM-AN1FH-10-0050-038	50	10	19	1	140	10.7
BM-AN1FH-10-0050-050	50	10	25	1.8	205	11.5
BM-AN1FH-10-0065-031	65	10	15.5	1.7	140	11.9
BM-AN1FH-10-0065-049	65	10	24.5	3	205	12.7
BM-AN1FH-10-0080-026	80	10	13	2.5	135	13.1
BM-AN1FH-10-0080-050	80	10	25	6.4	215	14.6
BM-AN1FH-10-0100-028	100	10	14	5.5	140	15.1
BM-AN1FH-10-0100-035	100	10	17.5	6.6	175	15.8
BM-AN1FH-10-0125-030	125	10	15	9.6	175	18.3
BM-AN1FH-10-0125-042	125	10	21	18	255	20.8
BM-AN1FH-10-0150-019	150	10	9.5	12	140	22.1
BM-AN1FH-10-0150-033	150	10	16.5	19	220	24.4
BM-AN1FH-10-0200-027	200	10	13.5	30	205	28.6
BM-AN1FH-10-0200-038	200	10	19	50	275	33.1
BM-AN1FH-10-0250-023	250	10	11.5	45	215	42.4
BM-AN1FH-10-0250-033	250	10	16.5	78	300	50.3
BM-AN1FH-10-0300-014	300	10	7	51	165	51.7
BM-AN1FH-10-0300-026	300	10	13	85	255	58.5

# INDUSTRIAL HOSES - compensators

## Steel compensators - AN1FH

code	DN	working pressure [bar]	angular movement [± °]	angular spring rate [N/°]	overall length [mm]	weight [kg]
PN 16						
BM-AN1FH-16-0050-034	50	16	17	1.6	140	10.7
BM-AN1FH-16-0050-050	50	16	25	3.4	215	11.8
BM-AN1FH-16-0065-027	65	16	13.5	2.7	140	11.9
BM-AN1FH-16-0065-050	65	16	25	6.4	215	13.4
BM-AN1FH-16-0080-023	80	16	11.5	3.8	135	13.1
BM-AN1FH-16-0080-046	80	16	23	10	215	14.6
BM-AN1FH-16-0100-024	100	16	12	8.6	140	15.1
BM-AN1FH-16-0100-037	100	16	18.5	16	190	16.3
BM-AN1FH-16-0125-026	125	16	13	17	165	18.7
BM-AN1FH-16-0125-032	125	16	16	24	200	20.5
BM-AN1FH-16-0150-023	150	16	11.5	25	175	23.1
BM-AN1FH-16-0150-035	150	16	17.5	44	240	26.6
BM-AN1FH-16-0200-025	200	16	12.5	58	225	34.4
BM-AN1FH-16-0200-033	200	16	16.5	93	315	41.4
BM-AN1FH-16-0250-014	250	16	7	62	205	58.4
BM-AN1FH-16-0250-021	250	16	10.5	88	245	62.9
BM-AN1FH-16-0300-020	300	16	10	138	230	68.5
BM-AN1FH-16-0300-026	300	16	13	199	320	80.7

# INDUSTRIAL HOSES - compensators

## Steel compensators



### US1SU

<b>Fittings type:</b>	Weld ends
<b>Bellow material:</b>	AISI 321 (1.4541)
<b>Fittings material:</b>	Carbon steel (1.0345)
<b>Working temp.:</b>	Up to +550°C
<b>Working press.:</b>	Up to 1 bar

Exhaust axial compensator with weld ends, intended for application in pipe systems to absorb axial movement. Designed for a service life of at least 1000 full displacement cycles (at +550°C).

code	DN	working pressure [bar]	movement			weld ends diameter x thickness [mm]	spring rate			overall length [mm]	weight [kg]
			axial [± mm]	lateral [± mm]	angular [± °]		axial [N/mm]	lateral [N/mm]	angular [Nm/°]		
BM-US1SU-01-0050-030	50	1	15	9	25	60.3 x 2.9	73	36	0.6	215	0.7
BM-US1SU-01-0050-049	50	1	24.5	25	25	60.3 x 2.9	45	8.1	0.4	280	0.8
BM-US1SU-01-0065-034	65	1	17	7.5	25	76.1 x 2.9	64	65	0.9	205	0.8
BM-US1SU-01-0065-056	65	1	28	21	25	76.1 x 2.9	63	23	0.9	270	1.3
BM-US1SU-01-0080-034	80	1	17	4	19	88.9 x 3.2	64	233	1.4	165	1.2
BM-US1SU-01-0080-056	80	1	28	11	25	88.9 x 3.2	38	51	0.9	210	1.4
BM-US1SU-01-0080-085	80	1	42.5	25.5	25	88.9 x 3.2	26	15	0.6	270	1.5
BM-US1SU-01-0100-049	100	1	24.5	4.5	21.5	114.3 x 3.6	40	274	1.5	165	1.7
BM-US1SU-01-0100-070	100	1	35	9.5	25	114.3 x 3.6	29	87	1.1	200	1.7
BM-US1SU-01-0100-119	100	1	59.5	29.5	25	114.3 x 3.6	27	26	1	275	2.6
BM-US1SU-01-0125-049	125	1	24.5	3.5	18	139.7 x 4.0	46	459	2.4	165	2.2
BM-US1SU-01-0125-084	125	1	42	11.5	25	139.7 x 4.0	42	135	2.2	215	3.2
BM-US1SU-01-0125-125	125	1	62.5	32.5	25	139.7 x 4.0	47	39	2.4	315	4.9
BM-US1SU-01-0150-054	150	1	27	3.5	16.5	168.3 x 4.5	51	598	3.8	175	2.6
BM-US1SU-01-0150-109	150	1	54.5	15.5	25	168.3 x 4.5	26	75	1.9	250	3.4
BM-US1SU-01-0150-158	150	1	79	47	25	168.3 x 4.5	48	29	3.5	405	6.8
BM-US1SU-01-0200-076	200	1	38	5	18	219.1 x 6.3	40	578	4.9	190	4.5
BM-US1SU-01-0200-120	200	1	60	16	25	219.1 x 6.3	62	206	7.6	275	7.3
BM-US1SU-01-0200-149	200	1	74.5	24	25	219.1 x 6.3	32	74	4	310	7.1
BM-US1SU-01-0250-067	250	1	33.5	3.5	13	273.0 x 6.3	59	1210	11	190	6.1
BM-US1SU-01-0250-144	250	1	72	19	25	273.0 x 6.3	39	134	7.3	310	8.8
BM-US1SU-01-0250-194	250	1	97	36.5	25	273.0 x 6.3	47	76	8.6	400	14.3
BM-US1SU-01-0300-069	300	1	34.5	3	11.5	323.9 x 7.1	70	1860	18	190	9.1
BM-US1SU-01-0300-121	300	1	60.5	9	20	323.9 x 7.1	21	220	5.3	245	8.5
BM-US1SU-01-0300-207	300	1	103.5	35	25	323.9 x 7.1	48	98	13	415	17.6

# INDUSTRIAL HOSES - compensators

## Steel compensators



### US1BU

<b>Fittings type:</b>	Swivel flanges DIN86044
<b>Bellow material:</b>	AISI 321 (1.4541)
<b>Fittings material:</b>	Carbon steel (1.0460 lub 1.0038)
<b>Working temp.:</b>	Up to +550°C
<b>Working press.:</b>	Up to 1 bar

Exhaust axial compensator with swivel flanges, intended for application in pipe systems to absorb axial movement. Designed for a service life of at least 1000 full displacement cycles (at +550°C).

code	DN	working pressure [bar]	movement			spring rate			overall length [mm]	weight [kg]
			axial [± mm]	lateral [± mm]	angular [± °]	axial [N/mm]	lateral [N/mm]	angular [Nm/°]		
BM-US1BU-01-0050-030	50	1	15	9	25	73	36	0.6	140	5.8
BM-US1BU-01-0050-049	50	1	24.5	25	25	45	8.1	0.4	210	5.9
BM-US1BU-01-0065-034	65	1	17	7.5	25	64	65	0.9	130	6.7
BM-US1BU-01-0065-055	65	1	27.5	19.5	25	40	16	0.6	190	6.9
BM-US1BU-01-0065-073	65	1	36.5	34	25	31	7	0.4	235	7.
BM-US1BU-01-0080-034	80	1	17	4	19	64	233	1.4	135	7.6
BM-US1BU-01-0080-056	80	1	28	11	25	38	51	0.9	180	7.9
BM-US1BU-01-0080-085	80	1	42.5	25.5	25	26	15	0.6	235	8.
BM-US1BU-01-0100-049	100	1	24.5	4.5	21.5	40	274	1.5	145	9.5
BM-US1BU-01-0100-070	100	1	35	9.5	25	29	87	1.1	180	9.6
BM-US1BU-01-0100-119	100	1	59.5	29.5	25	27	26	1	255	10.7
BM-US1BU-01-0125-049	125	1	24.5	3.5	18	46	459	2.4	145	11.7
BM-US1BU-01-0125-084	125	1	42	11.5	25	42	135	2.2	195	12.7
BM-US1BU-01-0125-125	125	1	62.5	32.5	25	47	39	2.4	290	14.4
BM-US1BU-01-0150-054	150	1	27	3.5	16.5	51	598	3.8	165	15.3
BM-US1BU-01-0150-109	150	1	54.5	15.5	25	26	75	1.9	240	15.9
BM-US1BU-01-0150-158	150	1	78	47	25	48	29	3.5	390	19.3
BM-US1BU-01-0200-076	200	1	38	5	18	40	578	4.9	155	11.4
BM-US1BU-01-0200-130	200	1	65	16	25	24	97	2.9	225	12.4
BM-US1BU-01-0200-149	200	1	74.5	24	25	32	74	4	275	13.8
BM-US1BU-01-0250-067	250	1	33.5	3.5	13	59	1210	11	155	13.6
BM-US1BU-01-0250-144	250	1	72	19	25	39	134	7.3	275	16.6
BM-US1BU-01-0250-194	250	1	97	36.5	25	47	76	8.6	370	22.1
BM-US1BU-01-0300-077	300	1	38.5	3.5	12.5	70	1980	18	170	19.6
BM-US1BU-01-0300-118	300	1	59	9	19.5	21	217	5	220	19.6
BM-US1BU-01-0300-207	300	1	103.5	35	25	48	98	13	385	28.1

# INDUSTRIAL HOSES - compensators

## PTFE compensators

### Working parameters of PTFE compensators

The working parameters of compensators listed in the tables (working pressure, temperature) are the maximum values and must not occur simultaneously. At elevated temperatures, it is required to reduce the values given in the table regarding the maximum working pressure. Please contact Sales or Technical Department of TUBES INTERNATIONAL® in the event of any doubts concerning permissible working parameters of the compensator in particular application.

compensator type	working temperature	maximum working pressure [bar]		
		2 ÷ 3 convolutions	4 ÷ 6 convolutions	7 ÷ 10 convolutions
R	+50°C	10	6	2.5
	+100°C	8	4.5	2
	+235°C	2	1	0
R-HD	+50°C	16	10	6
	+100°C	12.5	8	4.5
	+235°C	3	2	1



### R, R-HD type

**Material:** PTFE (also antistatic)  
**Reinforcement:** Stainless steel rings  
**Flanges:** Ductile cast iron GGG 40 with tie rods  
**Working temp.:** Up to +235°C

PTFE compensators are made of helically corrugated bellow finished with flanges. Reinforced with external rings made of stainless steel. Flanges made according to ASA and DIN standards. Special versions are also available: double walled bellow with a draining system, with carbon steel or stainless steel flanges, with reinforcing rings made of Monel 400 or Hastelloy N4, with internal pilot ferrule.

Due to such advantages as good flexibility of connection, very good chemical and thermal resistance and self-cleaning properties they are widely used in chemical, food and pharmaceutical industry.

# INDUSTRIAL HOSES - compensators

## PTFE compensators

### R type 10 bar

code	DN [mm]	length [mm]			axial movement / convolution [± mm]	lateral movement / convolution [± mm]	angular movement / convolution [± mm]
		two convolution bellow	three convolution bellow	any additional convolution +			
TG-R-025-*	25	45	55	12	4.5	3	6.5
TG-R-032-*	32	55	65	13	4.5	3	6
TG-R-040-*	40	55	70	15	5	3.5	6
TG-R-050-*	50	60	70	16	5	3.5	5.5
TG-R-065-*	65	60	80	20	5.5	4	5
TG-R-080-*	80	65	90	24	5.5	4	5
TG-R-100-*	100	70	95	25	6	4.5	4.5
TG-R-125-*	125	75	100	25	6.5	4.5	4
TG-R-150-*	150	75	105	25	7	4.5	3.5
TG-R-200-*	200	80	110	25	7.5	5	3
TG-R-250-*	250	90	120	26	8	5	3
TG-R-300-*	300	95	125	26	8	5	2.5
TG-R-350-*	350	100	125	26	8.5	5	2.5
TG-R-400-*	400	100	135	26	8.5	5	2
TG-R-500-*	500	105	140	26	9	5.5	2
TG-R-600-*	600	105	140	26	9	5.5	1.5

### R-HD type 16 bar

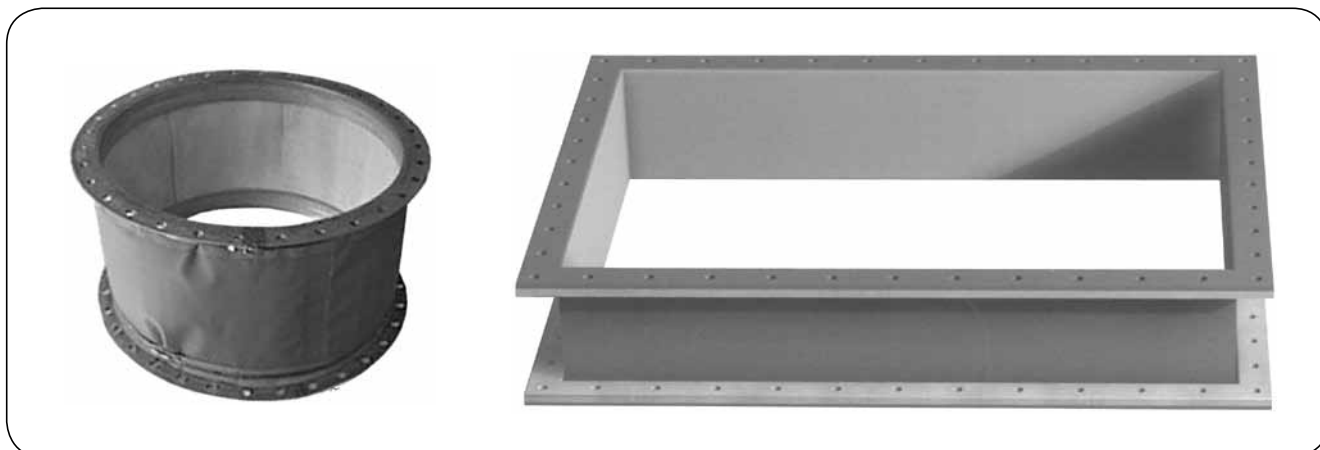
code	DN [mm]	length [mm]			axial movement / convolution [± mm]	lateral movement / convolution [± mm]	angular movement / convolution [± mm]
		two convolution bellow	three convolution bellow	any additional convolution +			
TG-R-HD-025-*	25	45	55	12	3	2	4.5
TG-R-HD-032-*	32	55	65	13	3	2	4
TG-R-HD-040-*	40	55	70	15	3.5	2.5	4
TG-R-HD-050-*	50	60	70	16	3.5	2.5	3.5
TG-R-HD-065-*	65	60	80	20	4	3	3.5
TG-R-HD-080-*	80	65	90	24	4	3	3.5
TG-R-HD-100-*	100	70	95	25	4.5	3	3
TG-R-HD-125-*	125	75	100	25	4.5	3	3
TG-R-HD-150-*	150	75	105	25	5	3	2.5
TG-R-HD-200-*	200	80	110	25	5	3.5	2
TG-R-HD-250-*	250	90	120	26	5.5	3.5	2
TG-R-HD-300-*	300	95	125	26	5.5	3.5	1.5
TG-R-HD-350-*	350	100	125	26	6	3.5	1.5
TG-R-HD-400-*	400	100	135	26	6	3.5	1.5
TG-R-HD-500-*	500	105	140	26	6.5	4	1.5
TG-R-HD-600-*	600	105	140	26	6.5	4	1

NOTE!

\* in code number refers to number of convolutions e.g. TB-R-300-3 refers to a "R" type compensator, DN300 with 3 convolutions.

# INDUSTRIAL HOSES - compensators

## Fabric compensators

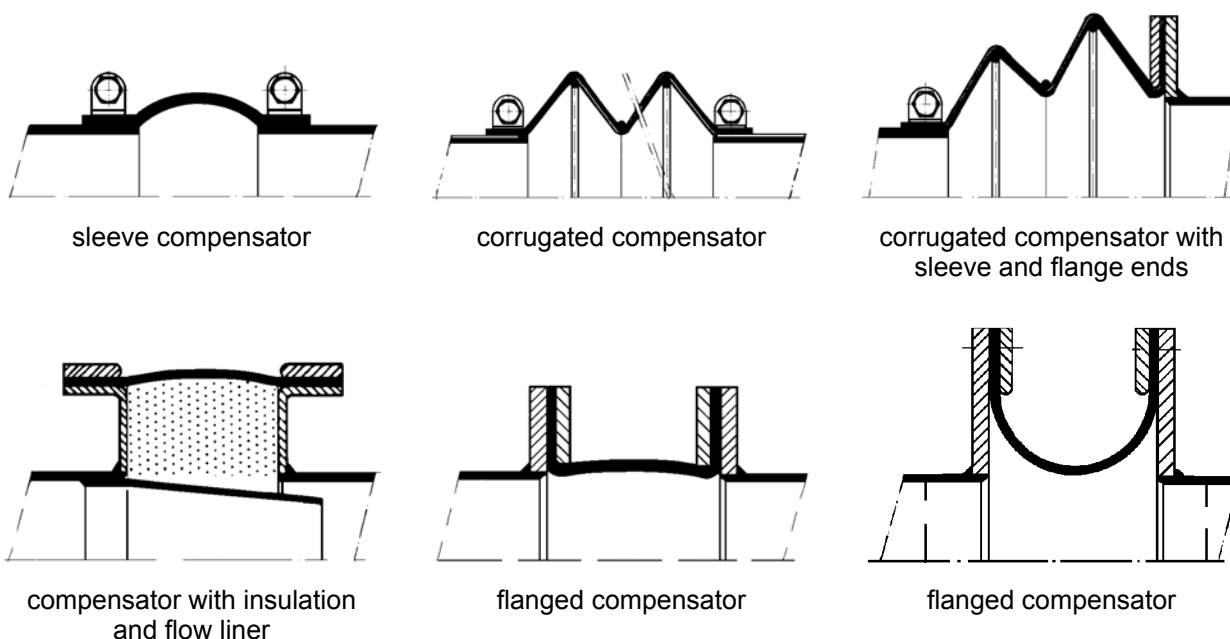


Fabric compensators are designed for cold and hot air installations, ventilation and air-conditioning systems, power plant exhaust fumes systems, to transfer loose products, etc.

Bellows of the compensators can be made of polyester or aramid fabric, fibreglass or ceramic fabric, fabric impregnated with EPDM rubber, Hypalon, silicone, Viton. All building materials are free of asbestos. The choice of adequate bellow material depends on the medium and its temperature (from +100°C up to +1000°C).

As textile materials are flexible and malleable they can be used to produce compensators of any cross-section e.g. circular, oval, rectangular. A set of layers, dimensions and shape of the compensator are selected individually for each item. Bellows can be flat, corrugated, with or without reinforcing rings, with diameter reduction, with flow liners. The liners are used to guide the stream inside the compensator. Recommended for abrasive products, at high flow rates, in high contamination of particulate media in order to reduce impurities build-up on the bellow walls.

### Examples of fabric compensator design





## Elastomeric compensators

An elastomer is a synthetic or natural polymer material, with ability to return to its original shape after deformation caused by mechanical stress, without any damage to its structure. The group of elastomers comprises a wider variety of materials than rubber, which is only one of the classes within this group. The elastomer has the ability to undergo deformation in a wide range of its dimensions under the influence of tensile, shear or compressive force and regain its original dimensions once the force has been removed.

Elastomeric compensators are intended to work in constant working temperature reaching above +200°C (depending on a bellow material). Each compensator is made of an elastomeric material with one or more layers of reinforcement vulcanized together to form one robust and resistant material. There is no standard set of dimensions for this type of compensators so they can be freely manufactured in any shape or dimension. Available as round, rectangular or oval with length adjusted to fit the installation. The length of these compensators is not fixed as it depends on displacement that is to be absorbed by the compensator. This type of compensators is the best choice for the transfer of wet gases and exhaust in ducting of hot air or chimney installations. They can efficiently absorb multidirectional displacement and vibration of hose assemblies and any incidents of misalignment.

There are four basic materials used to make elastomeric compensators:

**EPDM** - Resistant to the influence of hot air, uncoiled exhaust gases and weather conditions. Not intended for contact with fat, oils and petrochemicals. Suitable for installations with a constant working temperature up to +120°C and working pressure up to 50 kPa.

**FKM (Viton B)** - Excellent resistance to chemicals and high temperature. Resistant to the chemical impact of mineral oil and acid particles contained in exhausts as well as sulphur compounds (SO and H<sub>2</sub>S) in carbon and mineral oil exhausts. Suitable for dry and wet installations with a constant working temperature up to +200°C and working pressure up to 50 kPa.

**PTFE** - Combines excellent resistance to the majority of chemicals with high mechanical strength and low weight. Frequently used in sulphate removal installations where other materials are easily damaged by toxic compounds. Suitable for installations with a constant working temperature up to +250°C and working pressure up to 50 kPa.

**SI (Silicone)** - Temperature resistance is similar to Viton. It maintains its mechanical properties in a very wide range of temperatures. Used in e.g. food industry as it is taste and odour free. Resistant to extreme weather conditions, but not resistant to acids, oils and abrasion. Suitable for dry and wet installations with a constant working temperature up to +200°C (temporarily even higher) and working pressure up to 20 kPa.



# INDUSTRIAL FITTINGS - couplings

## TW couplings (EN ISO 14420-6, DIN 28450)

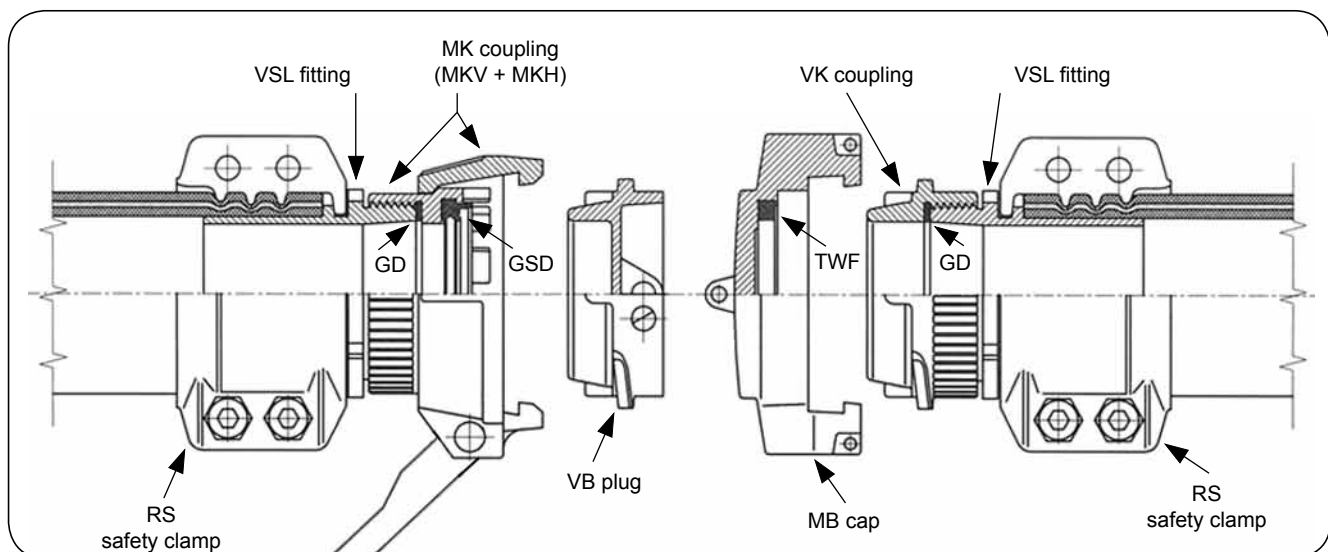


<b>Material:</b>	AISI 316 steel, AISI 316 steel with E-CTFE lining, brass, aluminium
<b>Coupling seal (GSD /TWF/TWO):</b>	Hypalon - for AISI 316 steel NBR - for other materials
<b>Thread seal (GD):</b>	Teflon - for AISI 316 steel Polyurethane - for other materials
<b>Working press.:</b>	From - 0.8 bar do 16 bar
<b>Working temp.:</b>	Depends on the seal material (table below)

TW (Tankwagen) couplings made according to EN ISO 14420-6 (previous DIN 28450) are also called tanker couplings or eurocouplings. Designed to transfer liquid, solid and gaseous products (except liquid gas and steam). Used in reloading applications in petrochemical, chemical and food industry. TW coupling consists of MK part and VK part. Both parts are locked together by a turn of the couplings and then secured by a locking handle. The handle prevents turning and uncoupling of the parts.

A plug VB (for MK part) and a cap MB (for VK part) are resistant to pressure. If the installation operates constantly under pressure, it is required to use safety locks. The main seal for this type of coupling is GSD moulded seal as a standard (TWO O-ring for 4"). There is TWF flat seal (TWO for 4") used in MB caps. TWF seal can be used instead of GSD. The thread is sealed with GD flat seal. Standard seals are supplied with couplings. Seals made of other materials are also available (see the table). When selecting a proper coupling for the medium it is required to check the corrosion resistance of its material, sealing and temperature impact. It is recommended to use TW couplings lined with E-CTFE for highly aggressive media.

seal material	symbol	colour	gasket type	temperature range (approximate)
polyurethane (PUR, vulkollan)	PU	blue	GSD, TWF, GD	from -20°C up to +70°C
nitrile (NBR, herbunan)	NBR	black	GSD, TWO, TWF	from -20°C up to +70°C
Hypalon (CSM)	HY	green	GSD, TWO, TWF	from -20°C up to +130°C
Viton (FPM)	VI	black with red dot	GSD, TWO, TWF, GD	from -20°C up to +120°C
PTFE (PTFE)	PTFE	white	TWO, TWF, GD	from -20°C up to +220°C
PTFE / Viton	PTFE-VI	white (encapsulated)	TWO, TWF	from -20°C up to +220°C
EPDM	EP	black	TWF, GD	from -20°C up to +100°C
Vamac	BIT	two red dots	GSD	up to +200°C




## INDUSTRIAL FITTINGS - couplings





### TW couplings (EN ISO 14420-6, DIN 28450)

picture	code	size	material	weight [kg]
	TW-VK-050-SSR	VK 50 (TW 1501) 2" BSP	AISI 316	0.31
	TW-VK-050-SSE		AISI 316 / E-CTFE	-
	TW-VK-050-MSR		brass	0.36
	TW-VK-080-SSR	VK 80 (TW 501) 3" BSP	AISI 316	0.73
	TW-VK-080-SSE		AISI 316 / E-CTFE	-
	TW-VK-080-MSR		brass	0.75
	TW-VK-100-SSR	VK 100 4" BSP	AISI 316	1.15
	TW-VK-100-SSE		AISI 316 / E-CTFE	-
	TW-VK-100-MSR		brass	1.10
	TW-MKV-050-SSR	MKV 50 (TW 1502)	AISI 316	0.22
	TW-MKV-050-MSR		brass	0.24
	TW-MKV-080-SSR	MKV 80 (TW 502)	AISI 316	0.51
	TW-MKV-080-MSR		brass	0.55
	TW-MKH-050-SSR	MKH 50	AISI 316	0.47
	TW-MKH-050-MSR		brass	0.49
	TW-MKH-080-SSR	MKH 80	AISI 316	0.94
	TW-MKH-080-MSR		brass	1.00
	TW-MK-050-SSR	MK 50 2" BSP	AISI 316	0.69
	TW-MK-050-SSE		AISI 316 / E-CTFE	-
	TW-MK-050-MSR		brass	0.73
	TW-MK-080-SSR	MK 80 3" BSP	AISI 316	1.45
	TW-MK-080-SSE		AISI 316 / E-CTFE	-
	TW-MK-080-MSR		brass	1.55
	TW-MK-100-SSR	MK 100 4" BSP	AISI 316	2.75
	TW-MK-100-SSE		AISI 316 / E-CTFE	-
	TW-MK-100-MSR		brass	2.75
	TW-MB-050-SSR	MB 50	AISI 316	0.30
	TW-MB-050-SSE		AISI 316 / E-CTFE	-
	TW-MB-050-MSR		brass	0.35
	TW-MB-050-ALR		aluminium	0.14
	TW-MB-080-SSR	MB 80	AISI 316	0.66
	TW-MB-080-SSE		AISI 316 / E-CTFE	-
	TW-MB-080-MSR		brass	0.87
	TW-MB-080-ALR		aluminium	0.30
	TW-MB-100-SSR	MB 100	AISI 316	1.20
	TW-MB-100-SSE		AISI 316 / E-CTFE	-
	TW-MB-100-MSR		brass	1.25
	TW-MB-100-ALR		aluminium	0.45

## INDUSTRIAL FITTINGS - couplings


### TW couplings (EN ISO 14420-6, DIN 28450)


picture	code	size	material	weight [kg]
 <p>VB plug (supplied without chain)</p>	TW-VB-050-SSR	VB 50	AISI 316	0.31
	TW-VB-050-SSE		AISI 316 / E-CTFE	-
	TW-VB-050-MSR		brass	0.32
	TW-VB-050-ALR		aluminium	0.13
	TW-VB-080-SSR	VB 80	AISI 316	0.76
	TW-VB-080-SSE		AISI 316 / E-CTFE	-
	TW-VB-080-MSR		brass	0.85
	TW-VB-080-ALR		aluminium	0.25
	TW-VB-100-SSR	VB 100	AISI 316	1.15
	TW-VB-100-SSE		AISI 316 / E-CTFE	-
	TW-VB-100-ALR		brass	0.44

picture	code	size	material	weight [kg]
 <p>TWF cap seal</p>	TW-TWF-050-PU	TWF 2" DN50	polyurethane	0.007
	TW-TWF-050-NBR		NBR	
	TW-TWF-050-VI		Viton	0.010
	TW-TWF-050-HY		Hypalon	0.007
	TW-TWF-050-PTFE		PTFE	0.011
	TW-TWF-050-EP		EPDM	0.007
	TW-TWF-080-PU	TWF 3" DN80	polyurethane	0.016
	TW-TWF-080-NBR		NBR	
	TW-TWF-080-VI		Viton	0.022
	TW-TWF-080-HY		Hypalon	0.018
	TW-TWF-080-PTFE		PTFE	0.025
	TW-TWF-080-EP		EPDM	0.016
 <p>TWO coupling seal</p>	TW-TWO-100-NBR	TWF 4" DN100	NBR	0.016
	TW-TWO-100-VI		Viton	0.027
	TW-TWO-100-HY		Hypalon	0.020
	TW-TWO-100-PTFE		PTFE	0.026
 <p>GSD coupling seal</p>	TW-GSD-050-PU	GSD 2" DN50	polyurethane	0.008
	TW-GSD-050-NBR		NBR	0.009
	TW-GSD-050-VI		Viton	0.012
	TW-GSD-050-HY		Hypalon	0.011
	TW-GSD-080-PU	GSD 3" DN80	polyurethane	0.015
	TW-GSD-080-NBR		NBR	0.018
	TW-GSD-080-VI		Viton	0.026
	TW-GSD-080-HY		Hypalon	0.022
	TW-GSD-080-BIT		vamac	0.015
	GD-050-PU	GD 2" DN50	polyurethane	0.004
 <p>GD thread seal</p>	GD-050-VI		Viton	0.003
	GD-050-PTFE		PTFE	0.004
	GD-050-EP		EPDM	
	GD-080-PU	GD 3" DN80	polyurethane	0.006
	GD-080-VI		Viton	
	GD-080-PTFE		PTFE	
	GD-080-EP		EPDM	
	GD-100-PU	GD 4" DN100	polyurethane	0.009
	GD-100-VI		Viton	0.014
	GD-100-PTFE		PTFE	0.009
	GD-100-EP		EPDM	

## INDUSTRIAL FITTINGS - couplings

### TW couplings (EN ISO 14420-6, DIN 28450)

picture	code	length [mm]	material	weight [kg]
KN chain 	TW-KN-200-SS	200	AISI 316	0.02
	TW-KN-200-MS		brass	
	TW-KN-300-SS	300	AISI 316	0.03
	TW-KN-300-MS		brass	
	TW-KN-350-SS	350	AISI 316	0.03
	TW-KN-350-MS		brass	

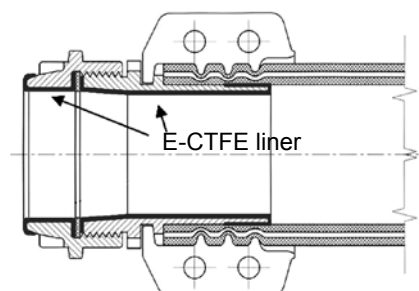
picture	code	size	material	weight [kg]
TS wrench (to mount couplings to hoses and to installation) 	TW-TS-050	TS 50	cast iron aluminium handle	0.93
	TW-TS-080	TS 80		1.35
	TW-TS-100	TS 100		2.35

Note!

To connect couplings to hoses use BSP male thread fittings type KKW, KRS (see „INDUSTRIAL FITTINGS - threaded couplings“).

# INDUSTRIAL FITTINGS - couplings

## E-CTFE lined couplings






E-CTFE coated couplings resist the most aggressive chemicals, even so corrosive that the couplings made of AISI 316 acid resistant steel fail. When corrosion is the case, it is recommended to use either expensive couplings made of special nickel-based alloys (e.g. Hastelloy) or (not so expensive) AISI 316 steel couplings with powder coated E-CTFE liner.

E-CTFE is a copolymer of ethylene and chlorotrifluoroethylene, known under the brand name Halar®. It is highly resistant to chemicals over a wide temperature range (approximately from -40°C up to +130°C). Resistant to all acids, lye and other aggressive media (pH range 1 ÷ 14). Very good mechanical properties, especially hardness and abrasion resistance. E-CTFE coatings have exceptional surface smoothness. The coating made of E-CTFE is about 0.5 ÷ 0.6 mm thick. There are two special versions also available: a conductive version ( $R < 10^6 \Omega$ ) and the one compliant with FDA requirements for food transfer.

Several types of industrial couplings can be coated with E-CTFE e.g.:

- TW couplings,
- CAMLOCK couplings,
- flanges,
- threaded couplings and adapters,
- composite hose fittings,
- breakaway couplings.

picture	code	size	material [mm]	weight [kg]
 <b>MK</b>	TW-MK-050-SSE	MK 50 - 2" (TW 1502)	AISI 316 E-CTFE	0.69
	TW-MK-080-SSE	MK 80 - 3" (TW 502)	AISI 316 E-CTFE	1.45
	TW-MK-100-SSE	MK 100 - 4"	AISI 316 E-CTFE	2.75
 <b>VK</b>	TW-VK-050-SSE	VK 50 G 2" (TW 1501)	AISI 316 E-CTFE	0.31
	TW-VK-080-SSE	VK 080 G 3" (TW 501)	AISI 316 E-CTFE	0.73
	TW-VK-100-SSE	VK 100 G 4"	AISI 316 E-CTFE	1.15
 <b>KRS</b>	TW-KRS-050-SSE	DN50 - 2"	AISI 316 E-CTFE	-
	TW-KRS-075-SSE	DN75 - 3"	AISI 316 E-CTFE	-
	TW-KRS-100-SSE	DN100 - 4"	AISI 316 E-CTFE	-

VB plug and MB caps are also available with E-CTFE liner.

# INDUSTRIAL FITTINGS - couplings

## CAMLOCK couplings

CAMLOCK couplings are manufactured in compliance with MIL-C-27487 (A-A-59326) specification. Their construction as well as operation is very simple. The coupling is connected just by opening the coupler arms and inserting the adapter into the coupler. The cam arms are then closed under normal hand pressure to complete joint. The standard coupling is supplied with a nitrile rubber seal that is placed in the groove of a coupler. The couplings are made of: aluminium, brass (bronze), AISI 316 stainless steel, polypropylene reinforced with fibreglass. Handles are made of AISI 304 stainless steel as a standard for all couplings made of brass, stainless steel, polypropylene and for aluminium couplings in sizes 1/2", 3/4", 1", 5" and 6". The couplings made of aluminium in sizes ranging from 1.1/4" to 4" have brass handles as a standard.

Polypropylene couplings in size 1/2" have 3/4" coupler and 3/4" adapter, however 1.1/4" couplings have 1" coupler and 1" adapter as a standard (couplings with 1.1/2" coupler and adapter are also available).

CRS and ERS couplings in size 1.1/2" are available as a version for hoses with either 38 mm or 40 mm inside diameter.

### Working pressure chart (bar)

material/size	1/2"	3/4" ÷ 2"	2.1/2"	3"	4"	5", 6"
brass	9	10	10	10	10	5
aluminium	9	10	10	10	10	5
AISI 316L	10	10	10	10	10	9
polypropylene	5	7	-	4	4	-

Working pressure values in the table apply to ambient temperature using elastomeric seals. Higher temperatures and PTFE seals reduce the pressure rating of the coupling.

The maximum working temperature of polypropylene couplings is +70°C. At such temperature working pressure values given above must be reduced by 40%.

Metal couplings are sealed with NBR seals, polypropylene couplings with EPDM seals.

The connection of a threaded coupling with the installation is sealed on the thread (BSPT male thread, BSP female thread). AU and DU couplings with a flat seal (polyurethane for aluminium couplings, PTFE for SS couplings) should be used for the connection with the installation with parallel male thread. The couplings with NPT thread are also available.

TUBES INTERNATIONAL® supplies two types of CAMLOCK couplings:




- SNAPLOCK® - manufactured by Action Sealtite, Heavy Duty type; designed for essential industrial connections, available with a complete 3.1B certificate if requested. Marked with a standard code number e.g. AC-A-100-SS.
- ECONOMY - economical version of CAMLOCK fittings for general industrial application. This version comes with reduced wall thickness, economical finish, and with reduced mechanical resistance. Yet it meets all pressure requirements. It is marked with a code with the letter X added at the end e.g. AC-A-100-SSX.

### Temperature range of seal material

temperature	NBR	EPDM	Viton	neoprene	PTFE / NBR	PTFE / Viton	FEP/silicone
minimum	-40°C	-30°C	-40°C	-50°C	-40°C	-40°C	-60°C
maximum	+93°C	+150°C	+200°C	+107°C	+93°C	+200°C	+205°C

# INDUSTRIAL FITTINGS - couplings




## CAMLOCK couplings

picture	size [inch]	code (brass)	code (aluminium)	code (AISI 316)	code (polypropylene)
	1/2	AC-A-050-B -	AC-A-050-A -	AC-A-050-SS AC-A-050-SSX	AC-A-050-P AC-A-050-PX
	3/4	AC-A-075-B -	AC-A-075-A AC-A-075-AX	AC-A-075-SS AC-A-075-SSX	AC-A-075-P AC-A-075-PX
	1	AC-A-100-B -	AC-A-100-A AC-A-100-AX	AC-A-100-SS AC-A-100-SSX	AC-A-100-P AC-A-100-PX
	1.1/4	AC-A-125-B -	AC-A-125-A AC-A-125-AX	AC-A-125-SS AC-A-125-SSX	AC-A-125-P AC-A-125-PX
	1.1/2	AC-A-150-B -	AC-A-150-A AC-A-150-AX	AC-A-150-SS AC-A-150-SSX	AC-A-150-P AC-A-150-PX
	2	AC-A-200-B -	AC-A-200-A AC-A-200-AX	AC-A-200-SS AC-A-200-SSX	AC-A-200-P AC-A-200-PX
	2.1/2	AC-A-250-B -	AC-A-250-A AC-A-250-AX	AC-A-250-SS AC-A-250-SSX	- -
	3	AC-A-300-B -	AC-A-300-A AC-A-300-AX	AC-A-300-SS AC-A-300-SSX	AC-A-300-P AC-A-300-PX
	4	AC-A-400-B -	AC-A-400-A AC-A-400-AX	AC-A-400-SS AC-A-400-SSX	- AC-A-400-PX
	5	AC-A-500-B -	AC-A-500-A AC-A-500-AX	AC-A-500-SS AC-A-500-SSX	- -
	6	AC-A-600-B -	AC-A-600-A AC-A-600-AX	AC-A-600-SS AC-A-600-SSX	- -
	1/2	AC-F-050-B -	AC-F-050-A -	AC-F-050-SS AC-F-050-SSX	AC-F-050-P AC-F-050-PX
	3/4	AC-F-075-B -	AC-F-075-A AC-F-075-AX	AC-F-075-SS AC-F-075-SSX	AC-F-075-P AC-F-075-PX
	1	AC-F-100-B -	AC-F-100-A AC-F-100-AX	AC-F-100-SS AC-F-100-SSX	AC-F-100-P AC-F-100-PX
	1.1/4	AC-F-125-B -	AC-F-125-A AC-F-125-AX	AC-F-125-SS AC-F-125-SSX	AC-F-125-P AC-F-125-PX
	1.1/2	AC-F-150-B -	AC-F-150-A AC-F-150-AX	AC-F-150-SS AC-F-150-SSX	AC-F-150-P AC-F-150-PX
	2	AC-F-200-B -	AC-F-200-A AC-F-200-AX	AC-F-200-SS AC-F-200-SSX	AC-F-200-P AC-F-200-PX
	2.1/2	AC-F-250-B -	AC-F-250-A AC-F-250-AX	AC-F-250-SS AC-F-250-SSX	- -
	3	AC-F-300-B -	AC-F-300-A AC-F-300-AX	AC-F-300-SS AC-F-300-SSX	AC-F-300-P AC-F-300-PX
	4	AC-F-400-B -	AC-F-400-A AC-F-400-AX	AC-F-400-SS AC-F-400-SSX	- AC-F-400-PX
	5	AC-F-500-B -	AC-F-500-A AC-F-500-AX	AC-F-500-SS AC-F-500-SSX	- -
	6	AC-F-600-B -	AC-F-600-A AC-F-600-AX	AC-F-600-SS AC-F-600-SSX	- -
	1/2	AC-E-050-B -	AC-E-050-A -	AC-E-050-SS AC-E-050-SSX	AC-E-050-P AC-E-050-PX
	3/4	AC-E-075-B -	AC-E-075-A AC-E-075-AX	AC-E-075-SS AC-E-075-SSX	AC-E-075-P AC-E-075-PX
	1	AC-E-100-B -	AC-E-100-A AC-E-100-AX	AC-E-100-SS AC-E-100-SSX	AC-E-100-P AC-E-100-PX
	1.1/4	AC-E-125-B -	AC-E-125-A AC-E-125-AX	AC-E-125-SS AC-E-125-SSX	AC-E-125-P AC-E-125-PX
	1.1/2	AC-E-150-B -	AC-E-150-A AC-E-150-AX	AC-E-150-SS AC-E-150-SSX	AC-E-150-P AC-E-150-PX
	2	AC-E-200-B -	AC-E-200-A AC-E-200-AX	AC-E-200-SS AC-E-200-SSX	AC-E-200-P AC-E-200-PX
	2.1/2	AC-E-250-B -	AC-E-250-A AC-E-250-AX	AC-E-250-SS AC-E-250-SSX	- -
	3	AC-E-300-B -	AC-E-300-A AC-E-300-AX	AC-E-300-SS AC-E-300-SSX	AC-E-300-P AC-E-300-PX
	4	AC-E-400-B -	AC-E-400-A AC-E-400-AX	AC-E-400-SS AC-E-400-SSX	- AC-E-400-PX
	5	AC-E-500-B -	AC-E-500-A AC-E-500-AX	AC-E-500-SS AC-E-500-SSX	- -
	6	AC-E-600-B -	AC-E-600-A AC-E-600-AX	AC-E-600-SS AC-E-600-SSX	- -






# INDUSTRIAL FITTINGS - couplings

## CAMLOCK couplings

picture	size [inch]	code (brass)	code (aluminium)	code (AISI 316)	code (polypropylene)
 <p><b>ERS</b></p>	1/2	-	-	-	-
	3/4	-	-	AC-ERS-075-SS	-
	1	-	-	AC-ERS-100-SS AC-ERS-100-SSX	-
	1.1/4	-	-	AC-ERS-125-SS	-
	1.1/2	-	-	AC-ERS-150-SS AC-ERS-150-SSX	-
	2	-	-	AC-ERS-200-SS AC-ERS-200-SSX	-
	2.1/2	-	-	-	-
	3	-	-	AC-ERS-300-SS AC-ERS-300-SSX	-
	4	-	-	AC-ERS-400-SSX	-
	5	-	-	-	-
	6	-	-	-	-
 <p><b>AU</b></p>	1/2	-	AC-AU-050-A	AC-AU-050-SS	-
	3/4	-	AC-AU-075-A	AC-AU-075-SS	-
	1	-	AC-AU-100-A	AC-AU-100-SS	-
	1.1/4	-	AC-AU-125-A	AC-AU-125-SS	-
	1.1/2	-	AC-AU-150-A	AC-AU-150-SS	-
	2	-	AC-AU-200-A	AC-AU-200-SS	-
	2.1/2	-	AC-AU-250-A	AC-AU-250-SS	-
	3	-	AC-AU-300-A	AC-AU-300-SS	-
	4	-	AC-AU-400-A	AC-AU-400-SS	-
	5	-	AC-AU-500-A	AC-AU-500-SS	-
	6	-	AC-AU-600-A	AC-AU-600-SS	-
 <p><b>FLA</b></p>	1/2	-	-	-	-
	3/4	AC-FLA-075-B	AC-FLA-075-A	AC-FLA-075-SS	AC-FLA-075-P
	1	AC-FLA-100-B	AC-FLA-100-A	AC-FLA-100-SS	AC-FLA-100-P
	1.1/4	-	AC-FLA-125-A	AC-FLA-125-SS	-
	1.1/2	AC-FLA-150-B	AC-FLA-150-A	AC-FLA-150-SS	AC-FLA-150-P
	2	AC-FLA-200-B	AC-FLA-200-A	AC-FLA-200-SS	AC-FLA-200-P
	2.1/2	AC-FLA-250-B	AC-FLA-250-A	AC-FLA-250-SS	-
	3	AC-FLA-300-B	AC-FLA-300-A	AC-FLA-300-SS	AC-FLA-300-P
	4	AC-FLA-400-B	AC-FLA-400-A	AC-FLA-400-SS	-
	5	-	-	-	-
	6	AC-FLA-600-B	AC-FLA-600-A	AC-FLA-600-SS	-




# INDUSTRIAL FITTINGS - couplings

## CAMLOCK couplings

picture	size [inch]	code (brass)	code (aluminium)	code (AISI 316)	code (polypropylene)
	1/2	AC-DP-050-B -	AC-DP-050-A -	AC-DP-050-SS AC-DP-050-SSX	- -
	3/4	AC-DP-075-B -	AC-DP-075-A AC-DP-075-AX	AC-DP-075-SS AC-DP-075-SSX	AC-DP-075-P AC-DP-075-PX
	1	AC-DP-100-B -	AC-DP-100-A AC-DP-100-AX	AC-DP-100-SS AC-DP-100-SSX	AC-DP-100-P AC-DP-100-PX
	1.1/4	AC-DP-125-B -	AC-DP-125-A AC-DP-125-AX	AC-DP-125-SS AC-DP-125-SSX	- -
	1.1/2	AC-DP-150-B -	AC-DP-150-A AC-DP-150-AX	AC-DP-150-SS AC-DP-150-SSX	AC-DP-150-P AC-DP-150-PX
	2	AC-DP-200-B -	AC-DP-200-A AC-DP-200-AX	AC-DP-200-SS AC-DP-200-SSX	AC-DP-200-P AC-DP-200-PX
	2.1/2	AC-DP-250-B -	AC-DP-250-A AC-DP-250-AX	AC-DP-250-SS AC-DP-250-SSX	- -
	3	AC-DP-300-B -	AC-DP-300-A AC-DP-300-AX	AC-DP-300-SS AC-DP-300-SSX	AC-DP-300-P AC-DP-300-PX
	4	AC-DP-400-B -	AC-DP-400-A AC-DP-400-AX	AC-DP-400-SS AC-DP-400-SSX	- AC-DP-400-PX
	5	AC-DP-500-B -	AC-DP-500-A AC-DP-500-AX	AC-DP-500-SS AC-DP-500-SSX	- -
	6	AC-DP-600-B -	AC-DP-600-A AC-DP-600-AX	AC-DP-600-SS AC-DP-600-SSX	- -
	1/2	AC-D-050-B -	AC-D-050-A -	AC-D-050-SS AC-D-050-SSX	AC-D-050-P AC-D-050-PX
	3/4	AC-D-075-B -	AC-D-075-A AC-D-075-AX	AC-D-075-SS AC-D-075-SSX	AC-D-075-P AC-D-075-PX
	1	AC-D-100-B -	AC-D-100-A AC-D-100-AX	AC-D-100-SS AC-D-100-SSX	AC-D-100-P AC-D-100-PX
	1.1/4	AC-D-125-B -	AC-D-125-A AC-D-125-AX	AC-D-125-SS AC-D-125-SSX	AC-D-125-P AC-D-125-PX
	1.1/2	AC-D-150-B -	AC-D-150-A AC-D-150-AX	AC-D-150-SS AC-D-150-SSX	AC-D-150-P AC-D-150-PX
	2	AC-D-200-B -	AC-D-200-A AC-D-200-AX	AC-D-200-SS AC-D-200-SSX	AC-D-200-P AC-D-200-PX
	2.1/2	AC-D-250-B -	AC-D-250-A AC-D-250-AX	AC-D-250-SS AC-D-250-SSX	- -
	3	AC-D-300-B -	AC-D-300-A AC-D-300-AX	AC-D-300-SS AC-D-300-SSX	AC-D-300-P AC-D-300-PX
	4	AC-D-400-B -	AC-D-400-A AC-D-400-AX	AC-D-400-SS AC-D-400-SSX	- AC-D-400-PX
	5	AC-D-500-B -	AC-D-500-A AC-D-500-AX	AC-D-500-SS AC-D-500-SSX	- -
	6	AC-D-600-B -	AC-D-600-A AC-D-600-AX	AC-D-600-SS AC-D-600-SSX	- -
	1/2	-	AC-DU-050-A	AC-DU-050-SS	-
	3/4	-	AC-DU-075-A	AC-DU-075-SS	-
	1	-	AC-DU-100-A	AC-DU-100-SS	-
	1.1/4	-	AC-DU-125-A	AC-DU-125-SS	-
	1.1/2	-	AC-DU-150-A	AC-DU-150-SS	-
	2	-	AC-DU-200-A	AC-DU-200-SS	-
	2.1/2	-	AC-DU-250-A	AC-DU-250-SS	-
	3	-	AC-DU-300-A	AC-DU-300-SS	-
	4	-	AC-DU-400-A	AC-DU-400-SS	-
	5	-	AC-DU-500-A	AC-DU-500-SS	-
	6	-	AC-DU-600-A	AC-DU-600-SS	-

# INDUSTRIAL FITTINGS - couplings

## CAMLOCK couplings

picture	size [inch]	code (brass)	code (aluminium)	code (AISI 316)	code (polypropylene)
	1/2	AC-B-050-B -	AC-B-050-A -	AC-B-050-SS AC-B-050-SSX	AC-B-050-P AC-B-050-PX
	3/4	AC-B-075-B -	AC-B-075-A AC-B-075-AX	AC-B-075-SS AC-B-075-SSX	AC-B-075-P AC-B-075-PX
	1	AC-B-100-B -	AC-B-100-A AC-B-100-AX	AC-B-100-SS AC-B-100-SSX	AC-B-100-P AC-B-100-PX
	1.1/4	AC-B-125-B -	AC-B-125-A AC-B-125-AX	AC-B-125-SS AC-B-125-SSX	AC-B-125-P AC-B-125-PX
	1.1/2	AC-B-150-B -	AC-B-150-A AC-B-150-AX	AC-B-150-SS AC-B-150-SSX	AC-B-150-P AC-B-150-PX
	2	AC-B-200-B -	AC-B-200-A AC-B-200-AX	AC-B-200-SS AC-B-200-SSX	AC-B-200-P AC-B-200-PX
	2.1/2	AC-B-250-B -	AC-B-250-A AC-B-250-AX	AC-B-250-SS AC-B-250-SSX	-
	3	AC-B-300-B -	AC-B-300-A AC-B-300-AX	AC-B-300-SS AC-B-300-SSX	AC-B-300-P AC-B-300-PX
	4	AC-B-400-B -	AC-B-400-A AC-B-400-AX	AC-B-400-SS AC-B-400-SSX	- AC-B-400-PX
	5	AC-B-500-B -	AC-B-500-A AC-B-500-AX	AC-B-500-SS AC-B-500-SSX	-
	6	AC-B-600-B -	AC-B-600-A AC-B-600-AX	AC-B-600-SS AC-B-600-SSX	-
	1/2	AC-C-050-B -	AC-C-050-A -	AC-C-050-SS AC-C-050-SSX	AC-C-050-P AC-C-050-PX
	3/4	AC-C-075-B -	AC-C-075-A AC-C-075-AX	AC-C-075-SS AC-C-075-SSX	AC-C-075-P AC-C-075-PX
	1	AC-C-100-B -	AC-C-100-A AC-C-100-AX	AC-C-100-SS AC-C-100-SSX	AC-C-100-P AC-C-100-PX
	1.1/4	AC-C-125-B -	AC-C-125-A AC-C-125-AX	AC-C-125-SS AC-C-125-SSX	AC-C-125-P AC-C-125-PX
	1.1/2	AC-C-150-B -	AC-C-150-A AC-C-150-AX	AC-C-150-SS AC-C-150-SSX	AC-C-150-P AC-C-150-PX
	2	AC-C-200-B -	AC-C-200-A AC-C-200-AX	AC-C-200-SS AC-C-200-SSX	AC-C-200-P AC-C-200-PX
	2.1/2	AC-C-250-B -	AC-C-250-A AC-C-250-AX	AC-C-250-SS AC-C-250-SSX	-
	3	AC-C-300-B -	AC-C-300-A AC-C-300-AX	AC-C-300-SS AC-C-300-SSX	AC-C-300-P AC-C-300-PX
	4	AC-C-400-B -	AC-C-400-A AC-C-400-AX	AC-C-400-SS AC-C-400-SSX	- AC-C-400-PX
	5	AC-C-500-B -	AC-C-500-A AC-C-500-AX	AC-C-500-SS AC-C-500-SSX	-
	6	AC-C-600-B -	AC-C-600-A AC-C-600-AX	AC-C-600-SS AC-C-600-SSX	-
	1/2	- -	- -	- -	- -
	3/4	- -	- -	AC-CRS-075-SS -	- -
	1	- -	- -	AC-CRS-100-SS AC-CRS-100-SSX	- -
	1.1/4	- -	- -	AC-CRS-125-SS -	- -
	1.1/2	- -	- -	AC-CRS-150-SS AC-CRS-150-SSX	- -
	2	- -	- -	AC-CRS-200-SS AC-CRS-200-SSX	- -
	2.1/2	- -	- -	- -	- -
	3	- -	- -	AC-CRS-300-SS AC-CRS-300-SSX	- -
	4	- -	- -	- AC-CRS-400-SSX	- -
	5	- -	- -	-	-
	6	- -	- -	-	-

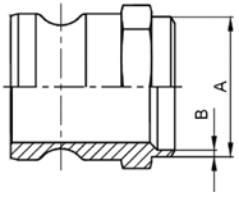
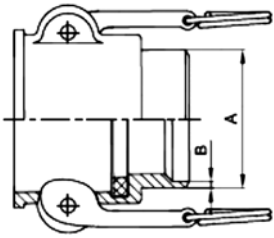
# INDUSTRIAL FITTINGS - couplings

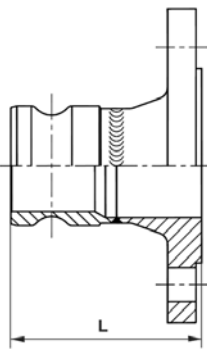
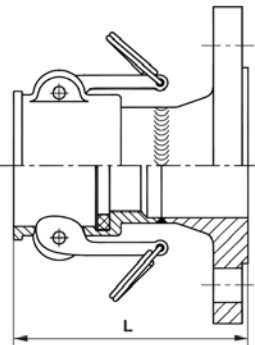
## CAMLOCK couplings

picture	size [inch]	code (brass)	code (aluminium)	code (AISI 316)	code (polypropylene)
 <p><b>FLB</b></p>	1/2	-	-	-	-
	3/4	AC-FLB-075-B	AC-FLB-075-A	AC-FLB-075-SS	AC-FLB-075-P
	1	AC-FLB-100-B	AC-FLB-100-A	AC-FLB-100-SS	AC-FLB-100-P -
	1.1/4	-	AC-FLB-125-A	AC-FLB-125-SS	-
	1.1/2	AC-FLB-150-B	AC-FLB-150-A	AC-FLB-150-SS	AC-FLB-150-P
	2	AC-FLB-200-B	AC-FLB-200-A	AC-FLB-200-SS	AC-FLB-200-P
	2.1/2	AC-FLB-250-B	AC-FLB-250-A	AC-FLB-250-SS	-
	3	AC-FLB-300-B	AC-FLB-300-A	AC-FLB-300-SS	AC-FLB-300-P
	4	AC-FLB-400-B	AC-FLB-400-A	AC-FLB-400-SS	-
	5	-	-	-	-
	6	AC-FLB-600-B	AC-FLB-600-A	AC-FLB-600-SS	-
 <p><b>DC</b></p>	1/2	AC-DC-050-B -	AC-DC-050-A -	AC-DC-050-SS AC-DC-050-SSX	- -
	3/4	AC-DC-075-B -	AC-DC-075-A AC-DC-075-AX	AC-DC-075-SS AC-DC-075-SSX	AC-DC-075-P AC-DC-075-PX
	1	AC-DC-100-B -	AC-DC-100-A AC-DC-100-AX	AC-DC-100-SS AC-DC-100-SSX	AC-DC-100-P AC-DC-100-PX
	1.1/4	AC-DC-125-B -	AC-DC-125-A AC-DC-125-AX	AC-DC-125-SS AC-DC-125-SSX	- -
	1.1/2	AC-DC-150-B -	AC-DC-150-A AC-DC-150-AX	AC-DC-150-SS AC-DC-150-SSX	AC-DC-150-P AC-DC-150-PX
	2	AC-DC-200-B -	AC-DC-200-A AC-DC-200-AX	AC-DC-200-SS AC-DC-200-SSX	AC-DC-200-P AC-DC-200-PX
	2.1/2	AC-DC-250-B -	AC-DC-250-A AC-DC-250-AX	AC-DC-250-SS AC-DC-250-SSX	- -
	3	AC-DC-300-B -	AC-DC-300-A AC-DC-300-AX	AC-DC-300-SS AC-DC-300-SSX	AC-DC-300-P AC-DC-300-PX
	4	AC-DC-400-B -	AC-DC-400-A AC-DC-400-AX	AC-DC-400-SS AC-DC-400-SSX	- AC-DC-400-PX
	5	AC-DC-500-B -	AC-DC-500-A AC-DC-500-AX	AC-DC-500-SS AC-DC-500-SSX	- -
	6	AC-DC-600-B -	AC-DC-600-A AC-DC-600-AX	AC-DC-600-SS AC-DC-600-SSX	- -

# INDUSTRIAL FITTINGS - couplings

## CAMLOCK couplings






picture	size [inch]	code	A diameter [mm]	B thickness [mm]
 <b>FW</b>	1/2	AC-FW-050-SS	21.3	2.0
	3/4	AC-FW-075-SS	26.7	2.3
	1	AC-FW-100-SS	33.4	2.6
	1.1/4	AC-FW-125-SS	42.2	2.6
	1.1/2	AC-FW-150-SS	48.3	2.6
	2	AC-FW-200-SS	60.3	2.9
	2.1/2	AC-FW-250-SS	76.0	2.9
	3	AC-FW-300-SS	88.9	3.2
 <b>BW</b>	4	AC-FW-400-SS	114.3	3.6
	1/2	AC-BW-050-SS	21.3	2.3
	3/4	AC-BW-075-SS	26.9	2.3
	1	AC-BW-100-SS	33.4	2.6
	1.1/4	AC-BW-125-SS	42.4	2.6
	1.1/2	AC-BW-150-SS	48.3	2.9
	2	AC-BW-200-SS	60.3	2.9
	2.1/2	AC-BW-250-SS	76.1	2.9
	3	AC-BW-300-SS	88.9	3.2
	4	AC-BW-400-SS	114.3	3.6

picture	size [inch]	code* (AISI 316)	code		L [mm]
			CAMLOCK	flange PN16	
 <b>FLA-T</b>	1/2	AC-FLA-050-SS-T	AC-FW-050-SS	TK-KSS-015-SS316	91.6
	3/4	AC-FLA-075-SS-T	AC-FW-075-SS	TK-KSS-020-SS316	95.9
	1	AC-FLA-100-SS-T	AC-FW-100-SS	TK-KSS-025-SS316	108.6
	1.1/4	AC-FLA-125-SS-T	AC-FW-125-SS	TK-KSS-032-SS316	118.4
	1.1/2	AC-FLA-150-SS-T	AC-FW-150-SS	TK-KSS-040-SS316	123.9
	2	AC-FLA-200-SS-T	AC-FW-200-SS	TK-KSS-050-SS316	129.9
	2.1/2	AC-FLA-250-SS-T	AC-FW-250-SS	TK-KSS-065-SS316	136.5
	3	AC-FLA-300-SS-T	AC-FW-300-SS	TK-KSS-080-SS316	146.3
 <b>FLB-T</b>	4	AC-FLA-400-SS-T	AC-FW-400-SS	TK-KSS-100-SS316	156.7
	1/2	AC-FLB-050-SS-T	AC-BW-050-SS	TK-KSS-015-SS316	85.4
	3/4	AC-FLB-075-SS-T	AC-BW-075-SS	TK-KSS-020-SS316	91.6
	1	AC-FLB-100-SS-T	AC-BW-100-SS	TK-KSS-025-SS316	102
	1.1/4	AC-FLB-125-SS-T	AC-BW-125-SS	TK-KSS-032-SS316	108
	1.1/2	AC-FLB-150-SS-T	AC-BW-150-SS	TK-KSS-040-SS316	112.8
	2	AC-FLB-200-SS-T	AC-BW-200-SS	TK-KSS-050-SS316	122.5
	2.1/2	AC-FLB-250-SS-T	AC-BW-250-SS	TK-KSS-065-SS316	125.4
	3	AC-FLB-300-SS-T	AC-BW-300-SS	TK-KSS-080-SS316	134.2
	4	AC-FLB-400-SS-T	AC-BW-400-SS	TK-KSS-100-SS316	136.8

\* - butt weld, with a joint quality level „B” according to EN ISO 5817.  
Available with swivel flanges and in compliance with ANSI B16.5 standard as well.




# INDUSTRIAL FITTINGS - couplings


## CAMLOCK couplings

picture	code	description	material
 <b>DA</b>	AC-D-150-A-100-AX	1.1/2" coupler D type x 1" adapter A type	aluminium
	AC-D-150-A-200-AX	1.1/2" coupler D type x 2" adapter A type	aluminium
	AC-D-200-A-150-AX	2" coupler D type x 1.1/2" adapter A type	aluminium
	AC-D-200-A-300-AX	2" coupler D type x 3" adapter A type	aluminium
	AC-D-200-A-400-AX	2" coupler D type x 4" adapter A type	aluminium
	AC-D-300-A-150-AX	3" coupler D type x 1.1/2" adapter A type	aluminium
	AC-D-300-A-200-AX	3" coupler D type x 2" adapter A type	aluminium
	AC-D-300-A-250-AX	3" coupler D type x 2.1/2" adapter A type	aluminium
	AC-D-300-A-400-AX	3" coupler D type x 4" adapter A type	aluminium
	AC-D-400-A-200-AX	4" coupler D type x 2" adapter A type	aluminium
	AC-D-400-A-300-AX	4" coupler D type x 3" adapter A type	aluminium
	AC-D-400-A-600-AX	4" coupler D type x 6" adapter A type	aluminium
	AC-D-600-A-400-AX	6" coupler D type x 4" adapter A type	aluminium
 <b>ER</b>	AC-E-300-200-AX	3" adapter E type with 2" hose tail	aluminium
	AC-E-400-300-AX	4" adapter E type with 3" hose tail	aluminium
 <b>BR</b>	AC-B-150-100-AX	1.1/2" coupler B type with 1" male thread	aluminium
	AC-B-200-150-AX	2" coupler B type with 1.1/2" male thread	aluminium
	AC-B-300-200-AX	3" coupler B type with 2" male thread	aluminium
	AC-B-300-400-AX	3" coupler B type with 4" male thread	aluminium
	AC-B-400-300-AX	4" coupler B type with 3" male thread	aluminium
 <b>CR</b>	AC-C-300-200-AX	3" coupler C type with 2" hose tail	aluminium
	AC-C-300-400-AX	3" coupler C type with 4" hose tail	aluminium
	AC-C-400-300-AX	4" coupler C type with 3" hose tail	aluminium
 <b>DD</b>	AC-DD-150/150-AX	1.1/2" x 1.1/2" dual coupler D type	aluminium
	AC-DD-200/200-AX	2" x 2" dual coupler D type	aluminium
	AC-DD-300/300-AX	3" x 3" dual coupler D type	aluminium
	AC-DD-400/400-AX	4" x 4" dual coupler D type	aluminium

# INDUSTRIAL FITTINGS - couplings


## CAMLOCK couplings


picture	code	description	material
	AC-A-200-300-AX	2" adapter A type with 3" female thread	aluminium
	AC-A-300-200-AX	3" adapter A type with 2" female thread	aluminium
	AC-A-300-400-AX	3" adapter A type with 4" female thread	aluminium
	AC-A-400-300-AX	4" adapter A type with 3" female thread	aluminium
	AC-A-400-600-AX	4" adapter A type with 6" female thread	aluminium
	AC-A-600-400-AX	6" adapter A type with 4" female thread	aluminium
	AC-AA-100-100-AX	dual adapter A type 1" x 1"	aluminium
	AC-AA-125-125-AX	dual adapter A type 1.1/4" x 1.1/4"	aluminium
	AC-AA-150-150-AX	dual adapter A type 1.1/2" x 1.1/2"	aluminium
	AC-AA-150-200-AX	dual adapter A type 1.1/2" x 2"	aluminium
	AC-AA-200-200-AX	dual adapter A type 2" x 2"	aluminium
	AC-AA-200-250-AX	dual adapter A type 2" x 2.1/2"	aluminium
	AC-AA-200-300-AX	dual adapter A type 2" x 3"	aluminium
	AC-AA-300-300-AX	dual adapter A type 3" x 3"	aluminium
	AC-AA-300-400-AX	dual adapter A type 3" x 4"	aluminium
	AC-AA-400-400-AX	dual adapter A type 4" x 4"	aluminium
	AC-AA-400-600-AX	dual adapter A type 4" x 6"	aluminium
	AC-AA-600-600-AX	dual adapter A type 6" x 6"	aluminium
	AC-F-300-150-AX	3" adapter F type with 1.1/2" male thread	aluminium
	AC-F-300-200-AX	3" adapter F type with 2" male thread	aluminium
	AC-F-300-400-AX	3" adapter F type with 4" male thread	aluminium


picture	size [inch]	NBR	EPDM	Viton	silicone	neoprene	food quality neoprene
	1/2	AC-G-050-B	AC-G-050-E	AC-G-050-V	AC-G-050-S	AC-G-050-N	-
	3/4	AC-G-075-B	AC-G-075-E	AC-G-075-V	AC-G-075-S	AC-G-075-N	AC-G-075-NF
	1	AC-G-100-B	AC-G-100-E	AC-G-100-V	-	AC-G-100-N	AC-G-100-NF
	1.1/4	AC-G-125-B	AC-G-125-E	AC-G-125-V	-	AC-G-125-N	AC-G-125-NF
	1.1/2	AC-G-150-B	AC-G-150-E	AC-G-150-V	-	AC-G-150-N	AC-G-150-NF
	2	AC-G-200-B	AC-G-200-E	AC-G-200-V	-	AC-G-200-N	AC-G-200-NF
	2.1/2	AC-G-250-B	AC-G-250-E	AC-G-250-V	-	AC-G-250-N	-
	3	AC-G-300-B	AC-G-300-E	AC-G-300-V	-	AC-G-300-N	AC-G-300-NF
	4	AC-G-400-B	AC-G-400-E	AC-G-400-V	-	AC-G-400-N	-
	5	AC-G-500-B	AC-G-500-E	AC-G-500-V	-	AC-G-500-N	-
	6	AC-G-600-B	AC-G-600-E	AC-G-600-V	-	AC-G-600-N	-
	size [inch]	PTFE NBR	PTFE Viton	FEP	polyurethane for AU & DU	PTFE for AU & DU	
	1/2	AC-G-050-T	-	-	AC-GU-050-P	AC-GU-050-T	
	3/4	AC-G-075-T	-	AC-G-075-TS	AC-GU-075-P	AC-GU-075-T	
	1	AC-G-100-T	AC-G-100-TV	AC-G-100-TS	AC-GU-100-P	AC-GU-100-T	
	1.1/4	AC-G-125-T	AC-G-125-TV	AC-G-125-TS	AC-GU-125-P	AC-GU-125-T	
	1.1/2	AC-G-150-T	AC-G-150-TV	AC-G-150-TS	AC-GU-150-P	AC-GU-150-T	
	2	AC-G-200-T	AC-G-200-TV	AC-G-200-TS	AC-GU-200-P	AC-GU-200-T	
	2.1/2	AC-G-250-T	-	-	AC-GU-250-P	AC-GU-250-T	
	3	AC-G-300-T	AC-G-300-TV	AC-G-300-TS	AC-GU-300-P	AC-GU-300-T	
	4	AC-G-400-T	-	AC-G-400-TS	AC-GU-400-P	AC-GU-400-T	
	5	AC-G-500-T	-	-	-	-	
	6	G-600-T	-	-	-	-	

# INDUSTRIAL FITTINGS - couplings

## CAMLOCK couplings

picture	size [inch]	1 type	2 type	3 type	4 type
<b>Special handles</b> 	1	-	AC-HLL-100-SS	AC-H-100-N	-
	1.1/4 - 2.1/2	AC-HL-200-BR	AC-HLL-200-SS	AC-H-200-N	AC-HAR-200-SS
	3 - 5	AC-HL-300-BR	-	AC-H-300-N	AC-HAR-300-SS

picture	length [mm]	brass	AISI 316
<b>Chains for caps and plugs</b> 	200	-	AC-CH-800-SS
	300	AC-CH-1200-BR	AC-CH-1200-SS

picture	size [inch]	handle brass	handle AISI 316	pin	ring
<b>Handles, pins, rings</b> 	1/2 ÷ 3/4	AC-HR-050-BR	AC-HR-050-SS	AC-P-050	AC-R-050
	1	AC-HR-100-BR	AC-HR-100-SS	AC-P-100	
	1.1/4 ÷ 2.1/2	AC-HR-200-BR	AC-HR-200-SS	AC-P-200	AC-R-200
	3 - 5	AC-HR-300-BR	AC-HR-300-SS	AC-P-300	
	6	AC-HR-600-BR	AC-HR-600-SS	AC-P-600	







# INDUSTRIAL FITTINGS - couplings

## CAMLOCK couplings

### SAFETY BUMP

SAFETY BUMP plug and cap system is a substitute for the traditional CAMLOCK plugs and cups. An ergonomic, special design handle facilitates hose handling.


SAFETY BUMPS are made of composite material reinforced with fibre glass. An antistatic version (black) is widely used in the chemical and petrochemical industry and a food-grade version (white) in the food industry. The latter is compliant with FDA and CFR 177.1520.

Chemical and petrochemical industry			Food industry		
picture	code	size [inch]	picture	code	size [inch]
	AC-SB-M-200-BK	2		AC-SB-M-200-W	2
	AC-SB-M-300-BK	3		AC-SB-M-300-W	3
	AC-SB-M-400-BK	4		AC-SB-M-400-W	4
	AC-SB-F-200-BK	2		AC-SB-F-200-W	2
	AC-SB-F-300-BK	3		AC-SB-F-300-W	3
	AC-SB-F-400-BK	4		AC-SB-F-400-W	4

### SAFETY LOCK

SAFETY LOCK system prevents uncontrolled disconnection of CAMLOCK couplings when a hose assembly is lifted, carried, or during loading or unloading operations due to medium pulsation. When SAFETY LOCK system is used, working safety is significantly increased and losses reduced down to the minimum.

Very easy to install and dismantle. It perfectly complements SAFETY BUMP system.

picture	code	size [inch]
	AC-SBL-200	2
	AC-SBL-300	3
	AC-SBL-400	4







## INDUSTRIAL FITTINGS - couplings

### CAMLOCK couplings - SAFLOK®



**Material:** AISI 316  
**Seal:** NBR  
**Working press.:** 20 bar (1/2" ÷ 2")  
                           10 bar (2.1/2" ÷ 4")  
**Working temp.:** From -40°C up to +93°C

SAFLOK® couplings are a variation of CAMLOCK coupling with additional level of safety against accidental disconnection. Safety is provided by a patented locking mechanism, built into the coupling arms. Such a design ensures that the arms are locked automatically when closed. Opening is a simple matter of tugging the finger rings. SAFLOK couplings are interchangeable with other CAMLOCK couplings manufactured according to MIL-C-27487 standard. Available spare parts: cam arms and pins. 1/2" couplings have 1/2" thread and 3/4" coupler.


picture	code	size [inch]	picture	code	size [inch]
Coupler „C” type with hose tail 	AC-SL-C-075	3/4	Coupler „CRS” type for RS safety clamp assembly 	AC-SL-CRS-075	3/4
	AC-SL-C-100	1		AC-SL-CRS-100	1
	AC-SL-C-125	1.1/4		AC-SL-CRS-125	1.1/4
	AC-SL-C-150	1.1/2		AC-SL-CRS-150	1.1/2
	AC-SL-C-200	2		AC-SL-CRS-200	2
	AC-SL-C-250	2.1/2		AC-SL-CRS-250	2.1/2
	AC-SL-C-300	3		AC-SL-CRS-300	3
	AC-SL-C-400	4		AC-SL-CRS-400	4
Coupler „B” type with male BSPT thread 	AC-SL-B-050	1/2	Coupler „D” type with female BSP thread 	AC-SL-D-050	1/2
	AC-SL-B-075	3/4		AC-SL-D-075	3/4
	AC-SL-B-100	1		AC-SL-D-100	1
	AC-SL-B-125	1.1/4		AC-SL-D-125	1.1/4
	AC-SL-B-150	1.1/2		AC-SL-D-150	1.1/2
	AC-SL-B-200	2		AC-SL-D-200	2
	AC-SL-B-250	2.1/2		AC-SL-D-250	2.1/2
	AC-SL-B-300	3		AC-SL-D-300	3
	AC-SL-B-400	4		AC-SL-D-400	4
Coupler „DU” type with female BSP thread (flat seal) 	AC-SL-DU-050	1/2	Cap „DC” type 	-	-
	AC-SL-DU-075	3/4		AC-SL-DC-075	3/4
	AC-SL-DU-100	1		AC-SL-DC-100	1
	AC-SL-DU-125	1.1/4		AC-SL-DC-125	1.1/4
	AC-SL-DU-150	1.1/2		AC-SL-DC-150	1.1/2
	AC-SL-DU-200	2		AC-SL-DC-200	2
	AC-SL-DU-250	2.1/2		AC-SL-DC-250	2.1/2
	AC-SL-DU-300	3		AC-SL-DC-300	3
	AC-SL-DU-400	4		AC-SL-DC-400	4

# INDUSTRIAL FITTINGS - couplings


## IBC system


**Material:** Polypropylene  
**Seal:** Low density polyethylene (LDPE)  
**Working press.:** Up to 7 bar  
**Working temp.:** From -10°C up to +70°C


IBC couplings were designed as the quickest and most secure unloading system for IBC (Intermediate Bulk Containers). Because of excellent chemical resistance, lightweight of polypropylene and durability of moving stainless steel parts, IBC couplings are a very economical solution for IBC unloading. Butress threads according to DIN EN 12713:2000-03, used in IBC couplings as a standard, are compatible with the threads of IBC containers of different producers.

	code	DIN EN 12713 male thread	CAMLOCK type and size
	AC-IBF060-075A	S60x6	A 3/4"
	AC-IBF060-100A	S60x6	A 1"
	AC-IBF060-150A	S60x6	A 1.1/2"
	AC-IBF060-200AF*	S60x6	A 2"
	AC-IBF060-200A	S60x6	A 2"
	AC-IBF060-200D	S60x6	D 2"
	AC-IBF092-300A	S92x4	A 3"
	AC-IBF100-100A	S100x8	A 1"
	AC-IBF100-300A	S100x8	A 3"

\* - made in white colour


	code	DIN EN 12713 male thread	BSP male thread
	AC-IBF060-M075	S60x6	3/4"
	AC-IBF060-M100	S60x6	1"
	AC-IBF060-M125	S60x6	1.1/4"
	AC-IBF060-M150	S60x6	1.1/2"
	AC-IBF060-M200	S60x6	2"
	AC-IBF075-M200	S75x6	2"
	AC-IBF092-M300	S92x4	3"
	AC-IBF100-M300	S100x8	3"


	code	DIN EN 12713 male thread	BSP female thread
	AC-IBF060-F125	S60x6	1.1/4"
	AC-IBF060-F150	S60x6	1.1/2"
	AC-IBF060-F200	S60x6	2"
	AC-IBF100-F075	S100x8	3/4"
	AC-IBF100-F100	S100x8	1"
	AC-IBF100-F200	S100x8	2"


	code	DIN EN 12713 male thread	hose DN
	AC-IBF060-H050	S60x6	1/2"
	AC-IBF060-H075	S60x6	3/4"
	AC-IBF060-H100	S60x6	1"
	AC-IBF060-H125	S60x6	1.1/4"
	AC-IBF060-H150	S60x6	1.1/2"
	AC-IBF060-H200	S60x6	2"


## INDUSTRIAL FITTINGS - couplings


### IBC system

	code	DIN EN 12713 male thread	female thread
	AC-IBM056-F200	S56x4	2" BSP
	AC-IBM060-F200	S60x6	2" BSP
	AC-IBM060-F200NPT	S60x6	2" NPT

	code	DIN EN 12713 female thread	DIN EN 12713 male thread
	AC-IBM060-F060	S60x6	S60x6
	AC-IBM060-F075	S60x6	S75x6
	AC-IBF092-IBM060	S92x4	S60x6
	AC-IBF100-IBM060	S100x8	S60x6

	code	DIN EN 12713 female thread	DIN EN 12713 male thread
	AC-IBMF060-K90	S60x6	S60x6


	code	DIN EN 12713 male thread	BSP male thread
	AC-IBM060-M200	S60x6	2"

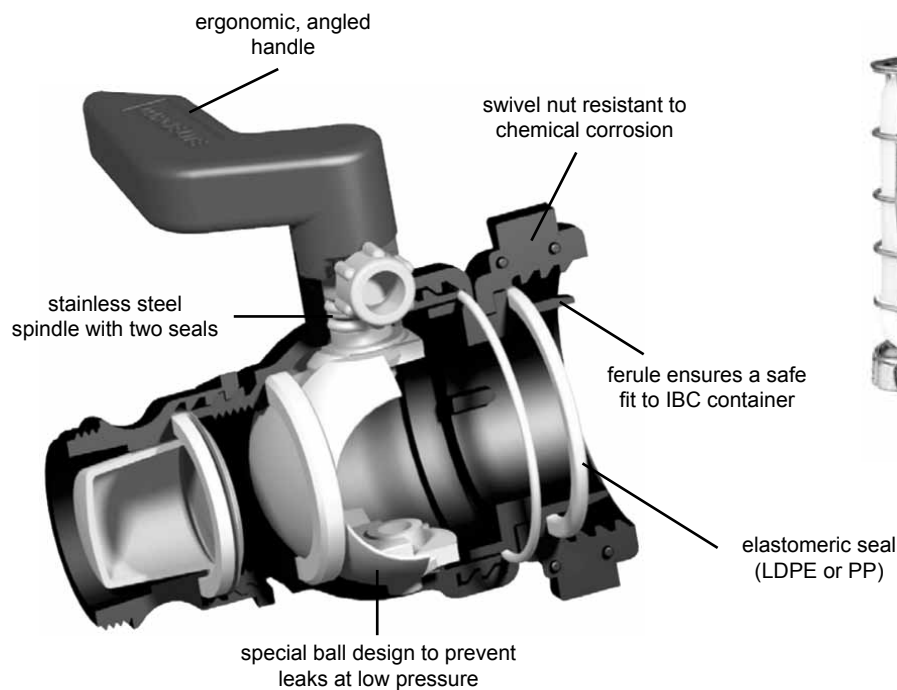
	code	DIN EN 12713 female thread
	AC-IBF-D060	S60x6
	AC-IBF-D100	S100x8

# INDUSTRIAL FITTINGS - couplings

## IBC system

A full flow ball valve entirely made of polypropylene to achieve complete corrosion resistance. The valve comes as a standard with LDPE polyethylene seal. The chemical resistance of the seal is outstanding, compared to standard EPDM, NBR or Viton seals. The valve is additionally equipped with a locking pin and a cap.

	code	DN	female thread	connection
	AC-IBV-F060-M060	2"	S60x6	S60x6 male
	AC-IBV-F060-M200	2"	S60x6	2" BSP male
	AC-IBV-F075-M060	2"	S75x6	S60x6 male
	AC-IBV-F075-200A	2"	S75x6	CAMLOCK A 2"
	AC-IBV-F080-200A	2"	S80x6	CAMLOCK A 2"
	AC-IBV-F080-M200NPT	2"	S80x6	2" NPT male
	AC-IBV-F080-M060	2"	S80x6	S60x6 male



IBC container

## Symmetrical couplings STORZ

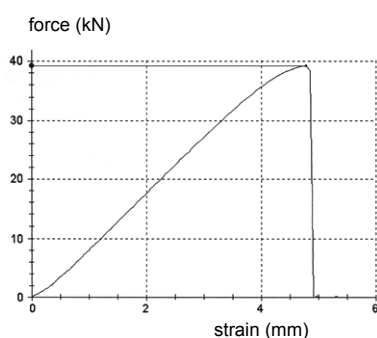
STORZ couplings are designed for industrial applications transferring loose and liquid products. Widely used in fire departments, irrigation systems, chemical and food industry, agriculture, etc.

The couplings connect particularly easy because the connecting halves are symmetrical. However only parts with the same lug dimension (KA) can be secured together.

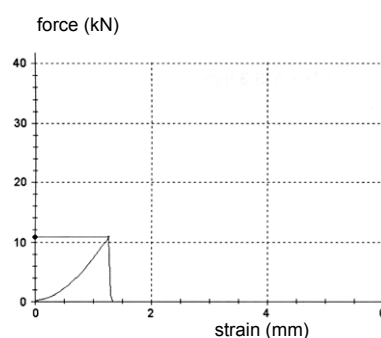
### The difference between cast and forged couplings

STORZ couplings are available in two versions: forged couplings (according to DIN standards) and cast couplings. The cast couplings have lower material strength and are more prone to casting defects. They can only be used for low working pressure (up to 6 bar and less demanding and reliable applications). As a standard TUBES INTERNATIONAL® provides high quality forged couplings with working pressure up to 16 bar. The cast couplings are available as well - special marking (\*) in our catalogue. The quality difference between the cast and forged couplings is pictured on the charts below showing a pull test results of the forged and cast couplings. The lugs break under pressure and the cast coupling fails.

**forged couplings**



**cast couplings**



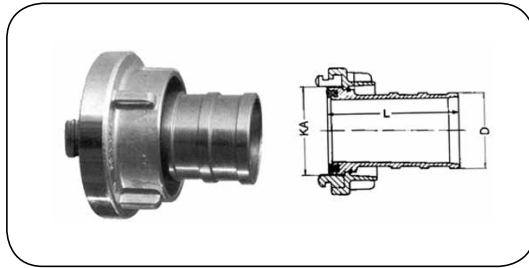
### Seal selection

A vacuum resistant seal for suction and delivery hoses is a standard. The couplings for delivery hoses (with a short hose tail) have seals which are not resistant to vacuum. STORZ couplings made of aluminium have white NBR rubber seal, brass couplings - black NBR rubber, stainless steel couplings - Viton seal. There are seals made of other materials also available - selection according to the parameters in the table below.

seal material	working temperature range	food applications	resistance to oils and lubricants
NBR	from -40°C up to +110°C	white - yes	limited
silicone	from -60°C up to +180°C	yes	no
Viton	from -15°C up to +200°C	no	yes
EPDM	from -35°C up to +130°C	no	no

# INDUSTRIAL FITTINGS - couplings

## Symmetrical couplings STORZ



### Coupling with hose tail

**Material:** Aluminium (Al), brass (Ms), stainless steel (SS)

**Working press.:** 16 bar

**Seal:** White NBR rubber for aluminium, black NBR rubber for brass, Viton for stainless steel

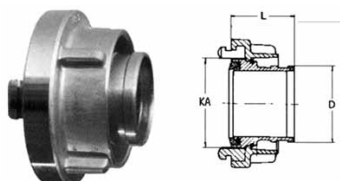
code (aluminium)	code (brass)	code (stainless steel)	size	lug dimension KA [mm]	hose diam. D [mm]	length L Al / Ms / SS [mm]
-	ST-12-031013-30	-	25-D	31	15	-- / 60 / --
ST-12-031019-19	-	-			21/19	55 / -- / --
ST-12-031025-11	ST-12-031025-30	ST-12-031025-43			25	53 / 53 / 53
ST-12-044019-11	ST-12-044019-30	-			19	70 / 70 / --
ST-12-044025-11	ST-12-044025-30	-	32	44	25	70 / 70 / --
ST-12-044032-11	ST-12-044032-30	-			32	70 / 70 / --
ST-12-051025-11	ST-12-051025-30	-			25	90 / 90 / --
ST-12-051032-11	ST-12-051032-30	-			32	90 / 90 / --
ST-12-051038-11	ST-12-051038-30	ST-12-051038-43	38	51	38	90 / 90 / 90
ST-12-066019-11	-	ST-12-066019-43			19	90 / -- / 90
ST-12-066025-11	ST-12-066025-30	ST-12-066025-43			25	90 / 90 / 90
ST-12-066028-11	-	-			28	90 / -- / --
ST-12-066032-11	ST-12-066032-30	ST-12-066032-43	52-C	66	32	90 / 90 / 90
ST-12-066032-21*	-	-			32	90 / -- / --
ST-12-066038-11	ST-12-066038-30	ST-12-066038-43			38	90 / 90 / 90
ST-12-066038-21*	-	-			38	90 / -- / --
ST-12-066040-11	-	ST-12-066040-43			40	90 / -- / 90
ST-12-066042-11	-	ST-12-066042-43			42	90 / -- / 90
ST-12-066042-21*	-	-			42	90 / -- / --
ST-12-066045-11	ST-12-066045-30	ST-12-066045-43			45	90 / 90 / 90
ST-12-066045-21*	-	-			45	90 / -- / --
ST-12-066050-11	-	ST-12-066050-43			50	90 / -- / 90
ST-12-066052-11	ST-12-066052-30	ST-12-066052-43			52	90 / 90 / 90
ST-12-066052-21*	-	-			52	90 / -- / --
ST-12-066055-11	-	-			55	90 / -- / --
ST-12-066060-11	-	-			60	90 / -- / --
ST-12-081038-11	ST-12-081038-30	ST-12-081038-43			38	90 / 90 / 90
ST-12-081052-11	ST-12-081052-30	ST-12-081052-43	65	81	52	95 / 90 / 95
ST-12-081063-11	-	-			63	95 / -- / --
ST-12-081065-11	ST-12-081065-30	ST-12-081065-43			65	95 / 90 / 100
ST-12-081070-11	-	-			70	95 / -- / --
ST-12-081075-11	ST-12-081075-30	ST-12-081075-43			75	95 / 90 / 95
ST-12-089052-11	-	-			52	125 / -- / --
ST-12-089065-11	ST-12-089065-30	ST-12-089065-43			65	125 / 95 / 105
ST-12-089065-21*	-	-			65	125 / -- / --
ST-12-089070-11	-	-	75-B	89	70	125 / -- / --
ST-12-089075-11	ST-12-089075-30	ST-12-089075-43			75	125 / 125 / 105
ST-12-089075-21*	-	-			75	125 / -- / --
ST-12-089080-11	-	ST-12-089080-43			80	125 / -- / 105
ST-12-105075-11	-	-			75	160 / -- / --
ST-12-105090-11	-	-			90	160 / -- / --
ST-12-115100-11	ST-12-115100-30	ST-12-115100-43	100	115	100	150 / 125 / 150
ST-12-133090-11	-	-			90	170 / -- / --
ST-12-133100-11	ST-12-133100-30	ST-12-133100-43			100	170 / 170 / 170
ST-12-133100-21*	-	-			100	170 / -- / --
ST-12-133110-11	ST-12-133110-30	ST-12-133110-43			110	170 / 170 / 170
ST-12-133125-11	-	-			125	180 / -- / --
ST-12-148125-11	ST-12-148125-30	ST-12-148125-43	125	148	125	200 / 142 / 180
ST-12-160150-11	ST-12-160150-30	ST-12-160150-43	150	160	150	180 / 180 / 180
ST-12-220205-11**	-	-	205	220	205	375 / -- / --
ST-12-278258-11**	-	-	250	278	258	400 / -- / --

\* - cast coupling PN 6 bar

\*\* - PN 10 bar

# INDUSTRIAL FITTINGS - couplings

## Symmetrical couplings STORZ



### Delivery hose coupling

**Material:** Aluminium (Al), brass (Ms),  
**Working press.:** 16 bar  
**Seal:** White NBR rubber for aluminium,  
 black NBR rubber for brass

code (aluminium)	code (brass)	code (stainless steel)	size	lug dimension KA [mm]	hose diam. D [mm]	length L Al / Ms / SS [mm]
ST-11-059045-16	-	-	45	59	45	75 / - / -
ST-11-066040-16	-	-	52-C	66	40	70 / - / -
ST-11-066042-16	ST-11-066042-35	-			42	55 / 55 / -
ST-11-066045-16	-	-			45	70 / - / -
ST-11-066052-16	ST-11-066052-35	-			52	55 / 75 / -
ST-11-066052-25*	-	-			52	55 / - / -
ST-11-066055-16	-	-			55	70 / - / -
ST-11-081052-16	-	-	65	81	52	60 / - / -
ST-11-081065-16	-	-			65	60 / - / -
ST-11-081075-16	-	-			75	65 / - / -
ST-11-089065-16	-	-	75-B	89	65	85 / - / -
ST-11-089070-16	-	-			70	75 / - / -
ST-11-089075-16	ST-11089075-35	-			75	60 / 85 / -
ST-11-089075-25*	-	-			75	60 / - / -
ST-11-115100-16	-	-	100	115	100	85 / - / -
ST-11-133100-11	-	-	110-A	133	100	110 / - / -
ST-11-133110-11	-	-			110	110 / - / -

\* - cast couplings PN 6 bar



### Coupling for RS clamp assembly

**Material:** Aluminium (Al), brass (Ms),  
 stainless steel (SS)  
**Working press.:** 16 bar  
**Seal:** White NBR rubber for aluminium,  
 black NBR rubber for brass,  
 Viton for stainless steel

code (aluminium)	code (brass)	code (stainless steel)	size	lug dimension KA [mm]	hose diam. D [mm]	length L Al / Ms / SS [mm]
-	ST-13-031019-30	ST-13-031019-43	25-D	31	19	- - / 73 / 73
ST-13-031025-11	ST-13-031025-30	ST-13-031025-43			25	75 / 73 / 75
-	-	ST-13-066032-43	52-C	66	32	- - / - / 95
ST-13-066038-11	-	ST-13-066038-43			38	90 / - - / 95
ST-13-066050-11	ST-13-066050-30	ST-13-066050-43			50	95 / 95 / 95
-	-	ST-13-081050-43	65	81	50	- - / - / 95
ST-13-089063-11	-	-	75-B	89	63	115 / - - / -
ST-13-089075-11	-	ST-13-089075-43			75	105 / - - / 105
ST-13-115100-11	-	-	100	115	100	195 / - - / -
ST-13-133100-11	-	ST-13-133100-43	110-A	133	100	145 / - - / 145
ST-13-148125-11	-	-	125	148	125	190 / - - / -
ST-13-160150-11	-	-	150	160	150	250 / - - / -



# INDUSTRIAL FITTINGS - couplings

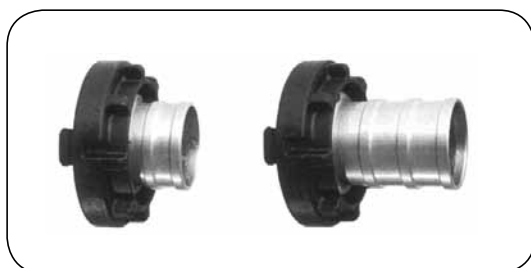
## Symmetrical couplings STORZ



### Coupling with serrated hose tail

**Material:** Aluminium (Al), brass (Ms), stainless steel (SS)  
**Working press.:** 16 bar  
**Seal:** White NBR rubber for aluminium, black NBR rubber for brass, Viton for stainless steel

code (aluminium)	code (brass)	code (stainless steel)	size	lug dimension KA [mm]	hose diam. D [mm]	length L Al / Ms / SS [mm]
ST-12-031013-11	-	-	25-D	31	15/13	55 / - / -
ST-12-031019-11	ST-12-031019-30	ST-12-031019-43			21/19	55 / 55 / 55
ST-14-066052-11	-	-	52-C	66	51	90 / - / -
ST-14-089076-11	-	-	75-B	89	76	125 / - / -
ST-14-133102-11	-	-	110-A	133	102	170 / - / -
ST-14-133110-11	-	-			110	170 / - / -
ST-14-148127-11	-	-	125	148	127	190 / - / -
ST-14-160152-11	-	-	150	160	152	180 / - / -



### Coupling with hose tail and plastic head

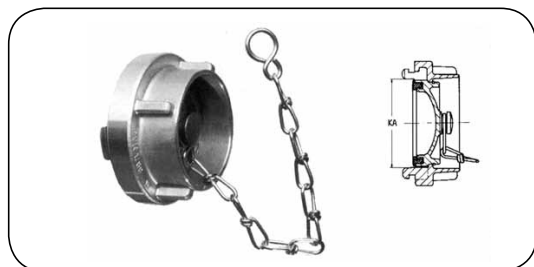
**Head material:** High performance plastic  
**Tail material:** Aluminium (Al)  
**Working press.:** 10 bar  
**Seal:** Black NBR rubber

code	size	lug dimension KA [mm]	hose diameter D [mm]	length L [mm]
ST-12-066019-60	52-C	66	19	90
ST-12-066025-60			25	90
ST-12-066032-60			32	90
ST-12-066038-60			38	90
ST-12-066040-60			40	90
ST-11-066042-65*			42	55
ST-12-066042-60			42	90
ST-11-066045-65*			45	70
ST-12-066045-60			45	90
ST-12-066050-60			50	90
ST-11-066052-65*			52	55
ST-12-066052-60			52	90
ST-12-066055-60			55	90
ST-12-066060-60			60	90

\* - coupling with a shorter hose tail

# INDUSTRIAL FITTINGS - couplings

## Symmetrical couplings STORZ



### Blank cap

**Material:** Aluminium (Al), brass (Ms), stainless steel (SS)  
**Working press.:** 16 bar  
**Seal:** White NBR rubber for aluminium, black NBR rubber for brass, Viton for stainless steel

code (aluminium)	code (brass)	code (stainless steel)	size	lug dimension KA [mm]
ST-31-031000-11	ST-31-031000-30	ST-31-031000-43	25-D	31
ST-31-044000-11	ST-31-044000-30	-	32	44
ST-31-051000-11	ST-31-051000-30	ST-31-051000-43	38	51
ST-31-059000-11	-	-	45	59
ST-31-066000-11	ST-31-066000-30	ST-31-066000-43	52-C	66
ST-31-066000-21*	-	-		
ST-31-081000-11	ST-31-081000-30	ST-31-081000-43	65	81
ST-31-089000-11	ST-31-089000-30	ST-31-089000-43	75-B	89
ST-31-089000-21*	-	-		
ST-31-105000-11	-	-	90	105
ST-31-115000-11	ST-31-115000-30	ST-31-115000-43	100	115
ST-31-133000-11	ST-31-133000-30	ST-31-133000-43	110-A	133
ST-31-133000-21*	-	-		
ST-31-148000-11	ST-31-148000-30	ST-31-148000-43	125	148
ST-31-160000-11	ST-31-160000-30	ST-31-160000-43	150	160
ST-31-220000-11**	-	-	205	220
ST-31-278000-11**	-	-	250	278

\* - cast couplings PN 6 bar

\*\* - PN 10 bar



### Blank plastic cap

**Head material:** High performance plastic  
**Tail material:** Aluminium (Al)  
**Working press.:** 10 bar  
**Seal:** Black NBR rubber

code	size	lug dimension KA [mm]
ST-31-066000-60	52-C	66

# INDUSTRIAL FITTINGS - couplings

## Symmetrical couplings STORZ

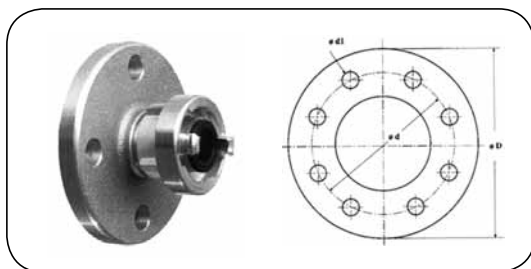


### Blank cap with lock

**Material:** Aluminium (Al), brass (Ms), stainless steel (SS)  
**Working press.:** 16 bar  
**Seal:** White NBR rubber for aluminium, black NBR rubber for brass, Viton for stainless steel

code (aluminium)	code (brass)	code (stainless steel)	size	lug dimension KA [mm]
ST-31-500066-11	ST-31-500066-30	ST-31-500066-43	52-C	66
ST-31-500081-11	-	-	65	81
ST-31-500089-11	ST-31-500089-30	-	75-B	89
ST-31-500105-11	-	-	90	105
ST-31-500115-11	-	-	100	115
ST-31-500133-11	-	-	110-A	133
ST-31-500148-11	-	-	125	148
ST-31-500160-11	-	-	150	160

(available with a universal key)



### Flanged coupling

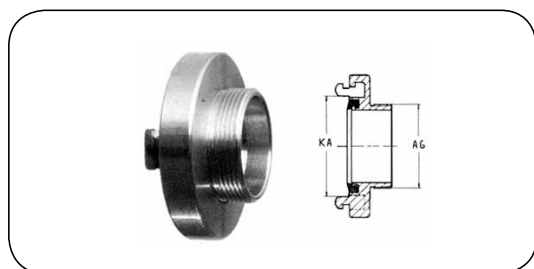
**Material:** Aluminium (Al), brass (Ms), stainless steel (SS)  
**Working press.:** 16 bar  
**Seal:** White NBR rubber for aluminium, black NBR rubber for brass, Viton for stainless steel

code (aluminium)	code (brass)	code (stainless steel)	size	lug dimension KA [mm]	flange size	D [mm]	d [mm]	n	d1 [mm]
ST-36-031025-11	ST-36-031025-30	ST-36-031025-43	25-D	31	DN25	115	85	4	14
ST-36-066040-11*	-	-	52-C	66	DN40	150	110	4	18
ST-36-066050-11	ST-36-066050-30	ST-36-066050-43			DN50	165	125	4	18
ST-36-066065-11	-	-			DN65	185	145	4	18
ST-36-066080-11	-	-			DN80	200	160	8	18
ST-36-081050-11	-	-			DN50	165	125	4	18
ST-36-081065-11	ST-36-081065-30	ST-36-081065-43	65	81	DN65	185	145	4	18
ST-36-081080-11	-	-			DN80	200	160	8	18
ST-36-089050-11	-	-			DN50	165	125	4	18
ST-36-089065-11	-	-	75-B	89	DN65	185	145	4	18
ST-36-089080-11	ST-36-089080-30	ST-36-089080-43			DN80	200	160	8	18
ST-36-089100-11	-	-			DN100	220	180	8	18
ST-36-115100-11	-	-	100	115	DN100	220	180	8	18
ST-36-133080-11	-	-	110-A	133	DN80	200	160	8	18
ST-36-133100-11	ST-36-133100-30	ST-36-133100-43			DN100	220	180	8	18
ST-36-148125-11	-	ST-36-148125-43	125	148	DN125	250	210	8	18
ST-36-160150-11	-	ST-36-160150-43	150	160	DN150	285	240	8	22

\* - galvanized steel flanges

# INDUSTRIAL FITTINGS - couplings

## Symmetrical couplings STORZ



### Adapter with BSP male thread

**Material:** Aluminium (Al), brass (Ms), stainless steel (SS)

**Working press.:** 16 bar

**Seal:** White NBR rubber for aluminium, black NBR rubber for brass, Viton for stainless steel

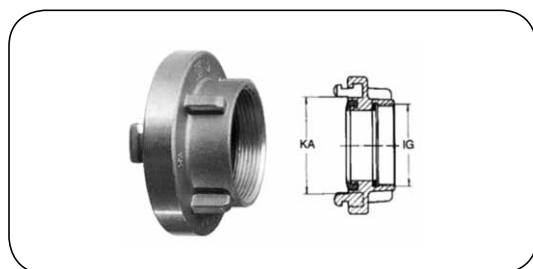
code (aluminium)	code (brass)	code (stainless steel)	size	lug dimension KA [mm]	thread size [inch]
-	ST-22-031050-30*	ST-22-031050-43	25-D	31	1/2
ST-22-031075-11	ST-22-031075-30	ST-22-031075-43			3/4
ST-22-031100-11	ST-22-031100-30	ST-22-031100-43			1
ST-22-031125-11	-	-			1.1/4
ST-22-031150-11	-	-			1.1/2
ST-22-044100-11	ST-22-044100-30	-	32	44	1
ST-22-044125-11	ST-22-044125-30	-			1.1/4
ST-22-051125-11	ST-22-051125-30	ST-22-051125-43*	38	51	1.1/4
ST-22-051150-11	ST-22-051150-30	ST-22-051150-43			1.1/2
ST-22-051200-11	ST-22-051200-30	-			2
ST-22-059200-11	-	-	45	59	2
ST-22-066075-16*	-	-	52-C	66	3/4
ST-22-066100-16	ST-22-066100-30	ST-22-066100-43			1
ST-22-066125-16	ST-22-066125-30	ST-22-066125-43			1.1/4
ST-22-066150-16	ST-22-066150-30	ST-22-066150-43			1.1/2
ST-22-066200-16	ST-22-066200-30	ST-22-066200-43			2
ST-22-066250-16	ST-22-066250-30	-			2.1/2
ST-22-081125-11	-	-	65	81	1.1/4
ST-22-081150-11	-	-			1.1/2
ST-22-081200-11	ST-22-081200-30	ST-22-081200-43			2
ST-22-081250-11	ST-22-081250-30	ST-22-081250-43			2.1/2
ST-22-081300-11	ST-22-081300-30	-			3
ST-22-089200-16	ST-22-089200-30	ST-22-089200-43	75-B	89	2
ST-22-089250-16	ST-22-089250-30	ST-22-089250-43			2.1/2
ST-22-089300-16	ST-22-089300-30	ST-22-089300-43			3
ST-22-105300-11*	-	-	90	105	3
ST-22-115400-11	ST-22-115400-30	ST-22-115400-43*	100	115	4
ST-22-133400-11	ST-22-133400-30	ST-22-133400-43	110-A	133	4
ST-22-133500-11	-	-			5
ST-22-148500-11*	-	-	125	148	5
ST-22-160600-11	-	-	150	160	6
ST-22-188600-11**	-	-	165	188	6
ST-22-220800-11**	-	-	205	220	8

\* - with nipple,

\*\* - with nipple, PN 10 bar.

# INDUSTRIAL FITTINGS - couplings

## Symmetrical couplings STORZ



### Adapter with BSP female thread

**Material:** Aluminium (Al), brass (Ms), stainless steel (SS)

**Working press.:** 16 bar

**Seal:** White NBR rubber for aluminium, black NBR rubber for brass, Viton for stainless steel

code (aluminium)	code (brass)	code (stainless steel)	size	lug dimension KA [mm]	thread size [inch]
ST-21-031050-11	ST-21-031050-30	ST-21-031050-43	25-D	31	1/2
ST-21-031075-11	ST-21-031075-30	ST-21-031075-43			3/4
ST-21-031100-11	ST-21-031100-30	ST-21-031100-43			1
ST-21-031125-11	-	-			1.1/4
ST-21-044100-11	ST-21-044100-30	-	32	44	1
ST-21-044125-11	ST-21-044125-30	-			1.1/4
ST-21-051100-11	ST-21-051100-30	-	38	51	1
ST-21-051125-11	ST-21-051125-30	ST-21-051125-43			1.1/4
ST-21-051150-11	ST-21-051150-30	ST-21-051150-43			1.1/2
ST-21-051200-11	ST-21-051200-30	-			2
ST-21-059150-16	-	-	45	59	1.1/2
ST-21-059200-16	-	-			2
ST-21-066075-16	-	ST-21-066075-43	52-C	66	3/4
ST-21-066100-16	ST-21-066100-30	ST-21-066100-43			1
ST-21-066125-16	ST-21-066125-30	ST-21-066125-43			1.1/4
ST-21-066150-16	ST-21-066150-30	ST-21-066150-43			1.1/2
ST-21-066175-16	-	-			1.3/4
ST-21-066200-16	ST-21-066200-30	ST-21-066200-43			2
ST-21-066250-16	ST-21-066250-30	ST-21-066250-43*			2.1/2
ST-21-081100-11	-	-	65	81	1
ST-21-081125-11	-	-			1.1/4
ST-21-081150-11	-	-			1.1/2
ST-21-081200-11	ST-21-081200-30	ST-21-081200-43			2
ST-21-081250-11	ST-21-081250-30	ST-21-081250-43			2.1/2
ST-21-081300-11	ST-21-081300-30	-			3
ST-21-089200-16	ST-21-089200-30	ST-21-089200-43	75-B	89	2
ST-21-089250-16	ST-21-089250-30	ST-21-089250-43			2.1/2
ST-21-089300-16	ST-21-089300-30	ST-21-089300-43			3
ST-21-105300-11	-	-	90	105	3
ST-21-115400-11	ST-21-115400-30	ST-21-115400-43	100	115	4
ST-21-133300-11*	-	-	110-A	133	3
ST-21-133400-11	ST-21-133400-30	ST-21-133400-43			4
ST-21-133450-11	ST-21-133450-30	ST-21-133450-43			4.1/2
ST-21-133500-11*	-	-			5
ST-21-148400-11	-	-	125	148	4
ST-21-148500-11	ST-21-148500-30	ST-21-148500-43			5
ST-21-160600-11	ST-21-160600-30	ST-21-160600-43	150	160	6
ST-21-188600-11**	-	-	165	188	6
ST-21-220800-11**	-	-	205	220	8
ST-21-278000-11**	-	-	250	278	10

\* - with reducer

\*\* - PN 10 bar

# INDUSTRIAL FITTINGS - couplings

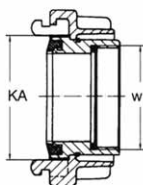
## Symmetrical couplings STORZ



### Adapter with BSP female thread and safety latch

**Material:** Aluminium (Al), stainless steel (SS)  
**Working press.:** 16 bar  
**Seal:** White NBR rubber for aluminium, Viton for stainless steel

code (aluminium)	code (brass)	code (stainless steel)	size	lug dimension KA [mm]	thread size [inch]
ST-27-031100-11	-	-	25-D	31	1
ST-27-051150-11	-	-	38	51	1.1/2
ST-27-066200-11	-	-	52-C	66	2
ST-27-081250-11	-	-	65	81	2.1/2
ST-27-089250-11	-	-	75-B	89	2.1/2
ST-27-089300-11	-	-			3
ST-27-105300-11	-	-	90	105	3
ST-27-115400-11	-	-	100	115	4
ST-27-133400-11	-	ST-27-133400-43	110-A	133	4
ST-27-133450-11	-	-			4.1/2
ST-27-148500-11	-	-	125	148	5
ST-27-160600-11	-	-	150	160	6



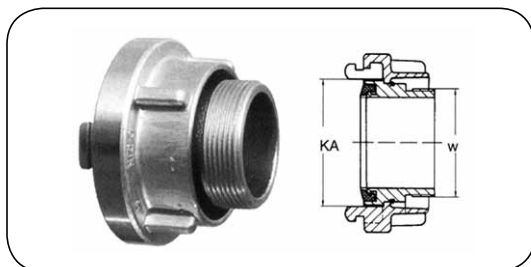
### Swivel coupling with BSP female thread

**Material:** Aluminium (Al), brass (Ms), stainless steel (SS)  
**Working press.:** 16 bar  
**Seal:** White NBR rubber for aluminium, black NBR rubber for brass, Viton for stainless steel

code (aluminium)	code (brass)	code (stainless steel)	size	lug dimension KA [mm]	thread size [inch]
-	ST-23-031075-30	-	25-D	31	3/4
-	ST-23-031100-30	-			1
ST-23-066125-11	-	-	52-C	66	1.1/4
ST-23-066150-11	-	ST-23-066150-43			1.1/2
ST-23-066200-11	ST-23-066200-30	ST-23-06620043			2
ST-23-081200-11	-	-	65	81	2
ST-23-081250-11	-	-			2.1/2
ST-23-081300-11	-	-			3
ST-23-089200-11	-	ST-23-089200-43	75-B	89	2
ST-23-089250-11	-	ST-23-089250-43			2.1/2
ST-23-089300-11	-	ST-23-089300-43			3
ST-23-105300-11	-	-	90	105	3
ST-23-115400-11	-	-	100	115	4
ST-23-133300-11	-	-	110-A	133	3
ST-23-133400-11	-	ST-23-133400-43			4
ST-23-148400-11	-	-	125	148	4
ST-23-148500-11	-	-			5
ST-23-160400-11	-	-	150	160	4
ST-23-160500-11	-	-			5
ST-23-160600-11	-	-			6

# INDUSTRIAL FITTINGS - couplings

## Symmetrical couplings STORZ



### Swivel coupling with BSP male thread

**Material:** Aluminium (Al), brass (Ms), stainless steel (SS)

**Working press.:** 16 bar

**Seal:** White NBR rubber for aluminium, black NBR rubber for brass, Viton for stainless steel

code (aluminium)	code (brass)	code (stainless steel)	size	lug dimension KA [mm]	thread size [inch]
-	ST-24-031075-30	-	25-D	31	3/4
-	ST-24-031100-30	-			1
ST-24-066150-11	-	-	52-C	66	1.1/2
ST-24-066200-11	ST-24-066200-30	ST-24-066200-43			2
ST-24-081150-11	-	-	65	81	1.1/2
ST-24-081200-11	-	-			2
ST-24-081250-11	-	-			2.1/2
ST-24-081300-11	-	-			3
ST-24-089200-11	-	ST-24-089200-43	75-B	89	2
ST-24-089250-11	-	ST-24-089250-43			2.1/2
ST-24-089300-11	-	-			3
ST-24-105300-11	-	-	90	105	3
ST-24-115300-11	-	-	100	115	3
ST-24-115400-11	-	-			4
ST-24-133300-11	-	-	110-A	133	3
ST-24-133400-11	-	ST-24-133400-43			4
ST-24-148400-11	-	-	125	148	4
ST-24-148500-11	-	-			5
ST-24-160450-11	-	-	150	160	4.1/2
ST-24-160500-11	-	-			5
ST-24-160600-11	-	-			6



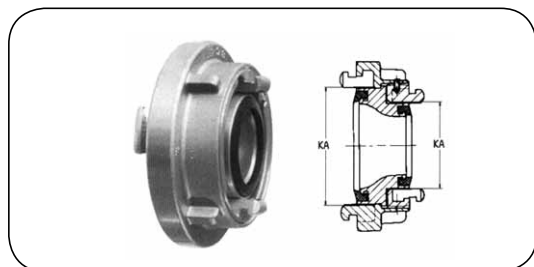
### Holding device

**Material:** Galvanized steel (St)

code	for coupling	lug dimension KA [mm]
ST-79-066000-50	C	66
ST-79-089000-50	B	89
ST-79-133089-50	A / B	133 / 89

# INDUSTRIAL FITTINGS - couplings

## Symmetrical couplings STORZ



### Reducer

**Material:** Aluminium (Al), brass (Ms), stainless steel (SS)  
**Working press.:** 16 bar  
**Seal:** White NBR rubber for aluminium, black NBR rubber for brass, Viton for stainless steel

code (aluminium)	code (brass)	code (stainless steel)	size	lug dimension KA [mm]
ST-35-031100-11	-	-	25-D / Geka	31 / 40
ST-35-051031-11	-	-	38 / 25-D	51 / 31
ST-35-059031-11	-	-	45 / 25-D	59 / 31
ST-35-066100-11	-	-	52-C / Geka	66 / 40
ST-35-066031-11	ST-35-066031-30	ST-35-066031-43	52-C / 25-D	66 / 31
ST-35-066044-11	ST-35-066044-30	-	52-C / 32	66 / 44
ST-35-066051-11	ST-35-066051-30	-	52-C / 38	66 / 51
ST-35-081051-11	-	-	65 / 38	81 / 51
ST-35-081059-11	-	-	65 / 45	81 / 59
ST-35-081066-11	ST-35-081066-30	ST-35-081066-43	65 / 52-C	81 / 66
ST-35-089066-11	ST-35-089066-30	ST-35-089066-43	75-B / 52-C	89 / 66
ST-35-089066-21*	-	-		
ST-35-089081-11	ST-35-089081-30	ST-35-089081-43	75-B / 65	89 / 81
ST-35-105089-11	-	-	90 / 75-B	105 / 89
ST-35-115081-11	-	-	100 / 65	115 / 81
ST-35-115089-11	-	-	100 / 75-B	115 / 89
ST-35-115105-11	-	-	100 / 90	115 / 105
ST-35-133066-11	-	-	110-A / 52-C	133 / 66
ST-35-133081-11	-	-	110-A / 65	133 / 81
ST-35-133089-11	ST-35-133089-30	ST-35-133089-43	110-A / 75-B	133 / 89
ST-35-133089-21*	-	-		
ST-35-133105-11	-	-	110-A / 90	133 / 105
ST-35-133115-11	-	-	110-A / 100	133 / 115
ST-35-148115-11	-	-	125 / 100	148 / 115
ST-35-148133-11	-	-	125 / 110-A	148 / 133
ST-35-160115-11	-	-	150 / 100	160 / 115
ST-35-160133-11	-	-	150 / 110-A	160 / 133
ST-35-160148-11	-	-	150 / 125	160 / 148
ST-35-188133-11**	-	-	165 / 110-A	188 / 133
ST-35-188160-11**	-	-	165 / 150	188 / 160
ST-35-220160-11**	-	-	205 / 150	220 / 160
ST-35-278220-11**	-	-	250 / 205	278 / 220

\* - cast couplings PN 6 bar

\*\* - PN 10 bar



# INDUSTRIAL FITTINGS - couplings

## Symmetrical couplings STORZ

Male / male thread coupling



code (aluminium)	male thread size [inch]	male thread size [inch]
ST-37-150150-10	1.1/2	1.1/2
ST-37-150200-10	1.1/2	2
ST-37-200200-10	2	2
ST-37-200300-10	2	3
ST-37-250250-10	2.1/2	2.1/2
ST-37-250300-10	2.1/2	3
ST-37-300300-10	3	3
ST-37-300400-10	3	4
ST-37-400400-10	4	4
ST-37-400400-40*	4	4
ST-37-500500-10	5	5
ST-37-600600-10	6	6
ST-37-800800-10	8	8

\* - stainless steel

Female / male thread coupling



code (aluminium)	female thread size [inch]	male thread size [inch]
ST-37-125200-12	1.1/4	2
ST-37-150200-12	1.1/2	2
ST-37-200250-12	2	2.1/2
ST-37-200300-12	2	3
ST-37-250200-12	2.1/2	2
ST-37-250200-42*	2.1/2	2
ST-37-250300-12	2.1/2	3
ST-37-250400-12	2.1/2	4
ST-37-300200-12	3	2
ST-37-300250-12	3	2.1/2
ST-37-300400-12	3	4
ST-37-400300-12	4	3
ST-37-400500-12	4	5
ST-37-500600-12	5	6

\* - stainless steel

Female / female thread coupling



code (aluminium)	female thread size [inch]	female thread size [inch]
ST-37-200200-14	2	2
ST-37-200250-14	2	2.1/2
ST-37-200300-14	2	3
ST-37-250250-14	2.1/2	2.1/2
ST-37-250300-14	2.1/2	3
ST-37-250300-44*	2.1/2	3
ST-37-250400-14	2.1/2	4
ST-37-300300-14	3	3
ST-37-300400-14	3	4
ST-37-400400-14	4	4
ST-37-400500-14	4	5
ST-37-500500-14	5	5
ST-37-500600-14	5	6

\* - stainless steel

Hose connector

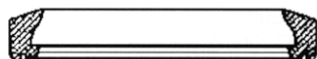


code (aluminium)	hose I.D. [mm]
ST-76-000025-30*	25
ST-76-000042-10	42
ST-76-000052-10	52
ST-76-000065-10	65
ST-76-000075-10	75
ST-76-000100-10	100
ST-76-000110-10	110
ST-76-000125-10	125
ST-76-000150-10	150

\* - brass

# INDUSTRIAL FITTINGS - couplings

## Symmetrical couplings STORZ



### Seal for delivery hose couplings

**Material:** Black NBR rubber, white NBR rubber, Viton, KTW - for drinking water

code (black NBR)	code (white NBR)	code (Viton)	code (KTW - drinking water)	size	lug dimension KA [mm]
ST-91-001059-00	-	-	-	45	59
ST-91-001066-00	ST-91-001066-01	ST-91-001066-03	ST-91-001066-05	52-C	66
ST-91-001081-00	ST-91-001081-01	-	-	65	81
ST-91-001089-00	ST-91-001089-01	ST-91-001089-03	ST-91-001089-05	75-B	89
ST-91-001115-00	-	-	-	100	115



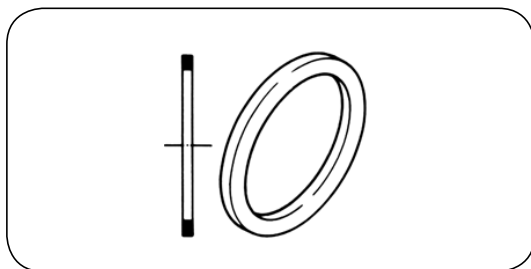
### Seal for suction-delivery hoses

**Material:** Black NBR rubber, white NBR rubber, Viton, KTW - for drinking water

code (black NBR)	code (white NBR)	code (silicone)	code (Viton)	code (EPDM)	code (KTW - drinking water)	size	lug KA [mm]
ST-91-002031-00	ST-91-002031-01	ST-91-002031-02	ST-91-002031-03	ST-91-002031-04	ST-91-002031-05	25-D	31
ST-91-002044-00	ST-91-002044-01	ST-91-002044-02	-	-	-	32	44
ST-91-002051-00	ST-91-002051-01	ST-91-002051-02	ST-91-002051-03	-	-	38	51
ST-91-002066-00	ST-91-002066-01	ST-91-002066-02	ST-91-002066-03	ST-91-002066-04	ST-91-002066-05	52-C	66
ST-91-002081-00	ST-91-002081-01	ST-91-002081-02	ST-91-002081-03	-	-	65	81
ST-91-002089-00	ST-91-002089-01	ST-91-002089-02	ST-91-002089-03	ST-91-002089-04	ST-91-002089-05	75-B	89
ST-91-002105-00	ST-91-002105-01	ST-91-002105-02	-	-	-	90	105
ST-91-002115-00	ST-91-002115-01	ST-91-002115-02	ST-91-002115-03	-	-	100	115
ST-91-002133-00	ST-91-002133-01	ST-91-002133-02	ST-91-002133-03	ST-91-002133-04	ST-91-002133-05	110-A	133
ST-91-002148-00	ST-91-002148-01	ST-91-002148-02	ST-91-002148-03	-	-	125	148
ST-91-002160-00	ST-91-002160-01	ST-91-002160-02	ST-91-002160-03	-	-	150	160
-	ST-91-002188-01	-	-	-	-	165	188
-	ST-91-002220-01	-	-	-	-	205	220
-	ST-91-002278-01	-	-	-	-	250	278

# INDUSTRIAL FITTINGS - couplings

## Symmetrical couplings STORZ



### Flat seal for couplings with female thread

**Material:** White NBR rubber, black NBR rubber, silicone, PTFE

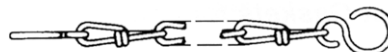
code (black NBR)	code (white NBR)	code (silicone)	code (PTFE)	male thread size [inch]	seal size [mm]
ST-91-003050-00	ST-91-003050-01	-	-	1/2	22x17x2
ST-91-003075-00	ST-91-003075-01	-	-	3/4	27x18x2
ST-91-003100-00	ST-91-003100-01	ST-91-003100-02	ST-91-003100-03	1	33x20x3
ST-91-003125-00	ST-91-003125-01	-	ST-91-003125-03	1.1/4	42x33x3
ST-91-003150-00	ST-91-003150-01	-	ST-91-003150-03	1.1/2	48x39x3
ST-91-003200-00	ST-91-003200-01	ST-91-003200-02	ST-91-003200-03	2	60x47x3
ST-91-003250-00	ST-91-003250-01	-	ST-91-003250-03	2.1/2	76x66x3
ST-91-003300-00	ST-91-003300-01	ST-91-003300-02	ST-91-003300-03	3	88x76x3
ST-91-003350-00	ST-91-003350-01	-	-	3.1/2	101x89x3
ST-91-003400-00	ST-91-003400-01	ST-91-003400-02	ST-91-003400-03	4	113x102x3
ST-91-003450-00	ST-91-003450-01	-	ST-91-003450-03	4.1/2	126x105x3
ST-91-003500-00	ST-91-003500-01	-	ST-91-003500-03	5	140x122x4
ST-91-003600-00	ST-91-003600-01	-	ST-91-003600-03	6	165x140x4
ST-91-003800-00	ST-91-003800-01	-	-	8	216x190x5
ST-91-003999-00	ST-91-003999-01	-	-	10	267x240x5

### Safety clamp preventing coupling from disconnection



code	for O.D. [mm]	size
ST-78-000098-00	98	52-C
ST-78-000126-00	126	75-B
ST-78-000144-00	144	90
ST-78-000156-00	156	100
ST-78-000182-00	182	110-A
ST-78-000196-00	196	125
ST-78-000215-00	215	150


### Chain for blank caps












code (galvanized steel)	code (stainless steel)	size
ST-91-006031-50	ST-91-006031-70	25 ÷ 38
ST-91-006066-50	ST-91-006066-70	45 ÷ 75
ST-91-006133-50	ST-91-006133-70	90 ÷ 150
ST-91-006220-50	-	165 ÷ 205

## INDUSTRIAL FITTINGS - couplings

### Symmetrical couplings STORZ

Water jet		
		
code	size [inch]	lug dimension KA [mm]
ST-46-200066-10	2	66
ST-46-250089-10	2.1/2	89

Blank cap with release valve		
		
code	size [inch]	lug dimension KA [mm]
ST-31-600066-11	52-C	66
ST-31-600081-11	65	81
ST-31-600089-11	75-B	89
ST-31-600105-11	90	105
ST-31-600115-11	100	115
ST-31-600133-11	110-A	133
ST-31-600148-11	125	148
ST-31-600160-11	150	160

STORZ wrenches		code	size	material	pic.
 1  2  3  4  5  6  7  8		ST-71-031031-50	D	steel	1
		ST-71-081051-20	65/38	malleable cast iron	2
		ST-71-089066-20	BC	malleable cast iron	3
		ST-71-089066-50	BC	steel (plastic handle)	4
		ST-71-133066-20	ABC	malleable cast iron	5
		ST-71-133066-50	ABC	steel (plastic handle)	6
		ST-71-160148-50	150/125	steel	7
		ST-71-278188-50	250/205	steel	8

### Symmetrical couplings STORZ



# INDUSTRIAL FITTINGS - couplings

## Symmetrical couplings GUILLEMIN



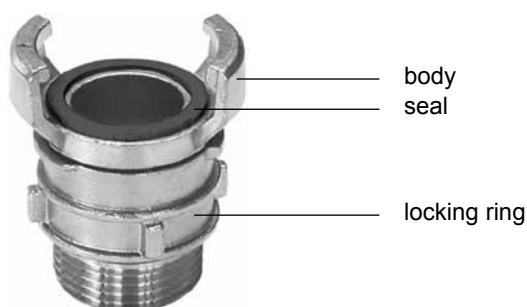
**Material:** Aluminium or AISI 316  
**Working press.:** 16 bar  
**Working temp.:** From -10°C up to +80°C  
 (aluminium, white NBR rubber seal)  
 From -10°C up to +180°C  
 (AISI 316, black FKM rubber seal - Viton),

GUILLEMIN couplings are intended for application in industrial installations transferring, loading and unloading liquid and dry loose substances in accordance with EN 14420-8 / NF E 29-572 standard. Simple and easy connection is the key to their popularity. Two identical halves with two lugs are closed just by putting them together with the seals facing each other and by turning the locking rings so that the lugs are securely engaged. To tighten the connection, turn the locking rings with a hook wrench for GUILLEMIN couplings by 1/4 a turn. GUILLEMIN couplings are used for delivery and suction-delivery applications for water, fluids, hydrocarbons, (including bituminous substances), chemicals (stainless steel version) and dry loose materials (powders, granules). Not suitable for steam and liquid gases. Used in industrial installations, irrigation, loading and unloading systems, as the equipment of road and rail tankers.

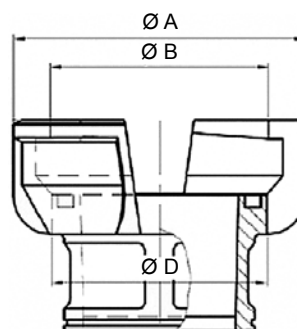
GUILLEMIN couplings are available in brass and polypropylene as well. The coupling without a locking ring is often used on fixed installations (the locking ring of the coupling that connects to the installation is the only one needed to connect two coupling halves together). Similarly, GUILLEMIN coupling with the locking ring but without lugs is often used to connect the hose.

GUILLEMIN couplings and French DSP/AR couplings in DN40, DN65 and DN100 size according to NF S61-704 and 705 standard are much of the same shape, and they are mainly used in fire fighting. They have grooves on the lugs, corrugated locking ring, profiled seal and can be connected easier without the use of a wrench. Basically, DSP/AR couplings can be connected with GUILLEMIN couplings but they are not interchangeable.

### Construction and dimensions of GUILLEMIN coupling





DN [mm]	Ø A [mm]	Ø B [mm]	Ø D [mm]
20	47	32	31
25	54	37	37
32	58	42.5	41.5
40	75	55	54
50	92	69	68
65	108	84	83
80	131	103	101
100	151	123	121
150	236	193	190




# INDUSTRIAL FITTINGS - couplings

## Symmetrical couplings GUILLEMIN


Coupling with hose tail 	code	DN [mm]	hose I.D. [mm]	material
	GU-W-051-A	50	51	aluminium
	GU-W-063-A	65	63	
	GU-W-076-A	80	76	
	GU-W-081-A	80	81	
	GU-W-102-A	100	102	
	GU-W-051-SS	50	51	AISI 316
	GU-W-063-SS	65	63	
	GU-W-076-SS	80	76	
	GU-W-102-SS	100	102	


Coupling with male thread 	code	DN [mm]	thread size [inch]	material
	GU-GZ-075-A	20	3/4	aluminium
	GU-GZ-100-A	25	1	
	GU-GZ-125-A	32	1.1/4	
	GU-GZ-150-A	40	1.1/2	
	GU-GZ-200-A	50	2	
	GU-GZ-250-A	65	2.1/2	
	GU-GZ-300-A	80	3	
	GU-GZ-400-A	100	4	
	GU-GZ-600-A	150	6	AISI 316
	GU-GZ-075-SS	20	3/4	
	GU-GZ-100-SS	25	1	
	GU-GZ-125-SS	32	1.1/4	
	GU-GZ-150-SS	40	1.1/2	
	GU-GZ-200-SS	50	2	
	GU-GZ-250-SS	65	2.1/2	
	GU-GZ-300-SS	80	3	
	GU-GZ-400-SS	100	4	

Coupling with female thread 	code	DN [mm]	thread size [inch]	material
	GU-GW-075-A	20	3/4	aluminium
	GU-GW-100-A	25	1	
	GU-GW-125-A	32	1.1/4	
	GU-GW-150-A	40	1.1/2	
	GU-GW-200-A	50	2	
	GU-GW-250-A	65	2.1/2	
	GU-GW-300-A	80	3	
	GU-GW-400-A	100	4	
	GU-GW-600-A	150	6	AISI 316
	GU-GW-075-SS	20	3/4	
	GU-GW-100-SS	25	1	
	GU-GW-125-SS	32	1.1/4	
	GU-GW-150-SS	40	1.1/2	
	GU-GW-200-SS	50	2	
	GU-GW-250-SS	65	2.1/2	
	GU-GW-300-SS	80	3	
	GU-GW-400-SS	100	4	

## INDUSTRIAL FITTINGS - couplings

### Symmetrical couplings GUILLEMIN


Blank cap with chain  	code	DN [mm]	material
	GU-DP-075-A	20	aluminium
	GU-DP-100-A	25	
	GU-DP-125-A	32	
	GU-DP-150-A	40	
	GU-DP-200-A	50	
	GU-DP-250-A	65	
	GU-DP-300-A	80	
	GU-DP-400-A	100	
	GU-DP-600-A	150	
	GU-DP-075-SS	20	AISI 316
	GU-DP-100-SS	25	
	GU-DP-125-SS	32	
	GU-DP-150-SS	40	
	GU-DP-200-SS	50	
	GU-DP-250-SS	65	
	GU-DP-300-SS	80	
	GU-DP-400-SS	100	


Seal  	size	EPDM	NBR	Viton
	DN 20	GU-U-075-EPDM	GU-U-075-NBR	GU-U-075-Viton
	DN 25	GU-U-100-EPDM	GU-U-100-NBR	GU-U-100-Viton
	DN 32	GU-U-125-EPDM	GU-U-125-NBR	GU-U-125-Viton
	DN 40	GU-U-150-EPDM	GU-U-150-NBR	GU-U-150-Viton
	DN 50	GU-U-200-EPDM	GU-U-200-NBR	GU-U-200-Viton
	DN 65	GU-U-250-EPDM	GU-U-250-NBR	GU-U-250-Viton
	DN 80	GU-U-300-EPDM	GU-U-300-NBR	GU-U-300-Viton
	DN 100	GU-U-400-EPDM	GU-U-400-NBR	GU-U-400-Viton





# INDUSTRIAL FITTINGS - couplings


## Symmetrical couplings NOR (Norway)

picture	code	DN [mm]	lug dimension [mm]	fitting diameter [mm]	description
	GP-NOR1040038B	40	50	38	Coupling with hose tail.  Material: bronze. Working press.: 10 bar. Seal: NBR.
	GP-NOR1050038B	50	66	38	
	GP-NOR1050052B	50	66	52	
	GP-NOR1065038B	65	83	38	
	GP-NOR1065052B	65	83	52	
	GP-NOR1065064B	65	83	64	

picture	code	DN [mm]	lug dimension [mm]	thread size [inch]	description
	GP-NOR2040025B	40	50	1	Coupling with BSP female thread.  Material: bronze. Working press.: 10 bar. Seal: NBR.
	GP-NOR2040050B	40	50	2	
	GP-NOR2050038B	50	66	1.1/2	
	GP-NOR2050050B	50	66	2	
	GP-NOR2065038B	65	83	1.1/2	
	GP-NOR2065050B	65	83	2	
	GP-NOR2065065B	65	83	2.1/2	


picture	code	DN [mm]	lug dimension [mm]	thread size [inch]	description
	GP-NOR3040032B	40	50	1.1/4	Coupling with BSP male thread.  Material: bronze. Working press.: 10 bar. Seal: NBR.
	GP-NOR3050038B	50	66	1.1/2	
	GP-NOR3050050B	50	66	2	
	GP-NOR3065038B	65	83	1.1/2	
	GP-NOR3065050B	65	83	2	
	GP-NOR3065065B	65	83	2.1/2	


picture	code	DN [mm]	lug dimension [mm]	description
	GP-NOR4040050B	40	50	Blank cap with chain.  Material: aluminium. Working press.: 10 bar. Seal: NBR.
	GP-NOR4050066B	50	66	
	GP-NOR4065083B	65	83	


picture	code	DN [mm]	description
	GP-NOR5040	40	Seal.  Material: NBR.
	GP-NOR5050	50	
	GP-NOR5065	65	


## INDUSTRIAL FITTINGS - couplings


### Symmetrical couplings ROTTA ROTH (Russia)

picture	code	DN [mm]	lug dimension [mm]	fitting diameter [mm]	description
	GP-ROTH1050038B	50	68	38	Coupling with hose tail.  Material: bronze. Working press.: 10 bar. Seal: NBR.
	GP-ROTH1050052B	50	68	52	
	GP-ROTH1070052B	70	85	52	
	GP-ROTH1070064B	70	85	64	

picture	code	DN [mm]	lug dimension [mm]	thread size [inch]	description
	GP-ROTH2050038B	50	68	1.1/2	Coupling with BSP female thread.  Material: bronze. Working press.: 10 bar. Seal: NBR.
	GP-ROTH2050050B	50	68	2	
	GP-ROTH2070050B	70	85	2	
	GP-ROTH2070065B	70	85	2.1/2	


picture	code	DN [mm]	lug dimension [mm]	thread size [inch]	description
	GP-ROTH3050038B	50	68	1.1/2	Coupling with BSP male thread.  Material: bronze. Working press.: 10 bar. Seal: NBR.
	GP-ROTH3050050B	50	68	2	


picture	code	DN [mm]	lug dimension [mm]	description
	GP-ROTH4050068B	50	68	Blank cap with chain.  Material: bronze. Working press.: 10 bar. Seal: NBR.
	GP-ROTH4070085B	70	85	


picture	code	DN [mm]	description
	GP-ROTH5050	50	Seal.
	GP-ROTH5070	70	Material: NBR.


## INDUSTRIAL FITTINGS - couplings

### Symmetrical couplings GOST no. 28352-89, 2217-66 (Russia)

picture	code	DN [mm]	lug dimension [mm]	fitting diameter [mm]	description
	GP-GOST1050052A	50	78	52	Coupling with hose tail.  Material: aluminium. Working press.: 10 bar. Seal: NBR.
	GP-GOST1070044A	70	95	44	
	GP-GOST1070052A	70	95	52	
	GP-GOST1070064A	70	95	64	
	GP-GOST1080075A	80	107	75	
	GP-GOST1100100A	100	140	100	
	GP-GOST1110110A	110	143	110	


picture	code	DN [mm]	lug dimension [mm]	fitting diameter [mm]	description
	GP-GOST1050038B	50	78	38	Coupling with hose tail.  Material: bronze. Working press.: 10 bar. Seal: NBR.
	GP-GOST1050052B	50	78	52	
	GP-GOST1070044B	70	95	44	
	GP-GOST1070052B	70	95	52	
	GP-GOST1070064B	70	95	64	
	GP-GOST1080075B	80	107	75	
	GP-GOST1100100B	100	140	100	
	GP-GOST1110110B	110	143	110	


picture	code	DN [mm]	lug dimension [mm]	thread size [inch]	description
	GP-GOST2050050A	50	78	2	Coupling with BSP female thread.  Material: aluminium. Working press.: 10 bar. Seal: NBR.
	GP-GOST2050065A	50	78	2.1/2	
	GP-GOST2070050A	70	95	2	
	GP-GOST2070065A	70	95	2.1/2	
	GP-GOST2080075A	80	107	3	
	GP-GOST2110100A	110	143	4	


picture	code	DN [mm]	lug dimension [mm]	thread size [inch]	description
	GP-GOST2050050B	50	78	2	Coupling with BSP female thread.  Material: bronze. Working press.: 10 bar. Seal: NBR.
	GP-GOST2050065B	50	78	2.1/2	
	GP-GOST2070050B	70	95	2	
	GP-GOST2070065B	70	95	2.1/2	
	GP-GOST2080050B	80	107	2	
	GP-GOST2080065B	80	107	2.1/2	
	GP-GOST2080075B	80	107	3	
	GP-GOST2100100B	100	140	4	
	GP-GOST2110100B	110	143	4	


# INDUSTRIAL FITTINGS - couplings


## Symmetrical couplings GOST no. 28352-89, 2217-66 (Russia)

picture	code	DN [mm]	lug dimension [mm]	thread size [inch]	description
	GP-GOST3050050A	50	78	2	Coupling with BSP male thread.  Material: aluminium. Working press.: 10 bar. Seal: NBR.
	GP-GOST3070050A	70	95	2	
	GP-GOST3070065A	70	95	2.1/2	
	GP-GOST3080050A	80	107	2	
	GP-GOST3080065A	80	107	2.1/2	
	GP-GOST3080075A	80	107	3	
	GP-GOST3110100A	110	143	4	

picture	code	DN [mm]	lug dimension [mm]	thread size [inch]	description
	GP-GOST3050065B	50	78	2.1/2	Coupling with BSP male thread.  Material: bronze. Working press.: 10 bar. Seal: NBR.
	GP-GOST3070050B	70	95	2	
	GP-GOST3070065B	70	95	2.1/2	
	GP-GOST3080075B	80	107	3	
	GP-GOST3100100B	100	140	4	
	GP-GOST3110100B	110	143	4	


picture	code	DN [mm]	lug dimension [mm]	description
	GP-GOST4050078A	50	78	Blank cap with chain.  Material: aluminium. Working press.: 10 bar. Seal: NBR.
	GP-GOST4070095A	70	95	
	GP-GOST4080107A	80	107	
	GP-GOST4100140A	100	140	
	GP-GOST4110143A	110	143	


picture	code	DN [mm]	lug dimension [mm]	description
	GP-GOST4050078B	50	78	Blank cap with chain.  Material: bronze. Working press.: 10 bar. Seal: NBR.
	GP-GOST4070095B	70	95	
	GP-GOST4080107B	80	107	
	GP-GOST4100140B	100	140	
	GP-GOST4110143B	110	143	


picture	code	DN [mm]	description
	GP-GOST5050	50	Seal.  Material: NBR.
	GP-GOST5070	70	
	GP-GOST5080	80	
	GP-GOST5100	100	
	GP-GOST5110	110	


## INDUSTRIAL FITTINGS - couplings


### Symmetrical couplings SMS (Sweden)

picture	code	DN [mm]	lug dimension [mm]	fitting diameter [mm]	description
	GP-SMS1032038B	32	41	38	Coupling with hose tail.  Material: bronze. Working press.: 10 bar. Seal: NBR.
	GP-SMS1063038B	63	76	38	
	GP-SMS1063052B	63	76	52	
	GP-SMS1063064B	63	76	64	

picture	code	DN [mm]	lug dimension [mm]	thread size [inch]	description
	GP-SMS2032025B	32	41	1	Coupling with BSP female thread.  Material: bronze. Working press.: 10 bar. Seal: NBR.
	GP-SMS2032050B	32	41	2	
	GP-SMS2063025B	63	76	1	
	GP-SMS2063038B	63	76	1.1/2	
	GP-SMS2063050B	63	76	2	
	GP-SMS2063065B	63	76	2.1/2	

picture	code	DN [mm]	lug dimension [mm]	thread size [inch]	description
	GP-SMS3032050B	32	41	2	Coupling with BSP male thread.  Material: bronze. Working press.: 10 bar. Seal: NBR.
	GP-SMS3063050B	32	76	2	

picture	code	DN [mm]	lug dimension [mm]	description
	GP-SMS4032041B	32	41	Blank cap with chain.  Material: bronze. Working press.: 10 bar. Seal: NBR.
	GP-SMS4063076B	63	76	

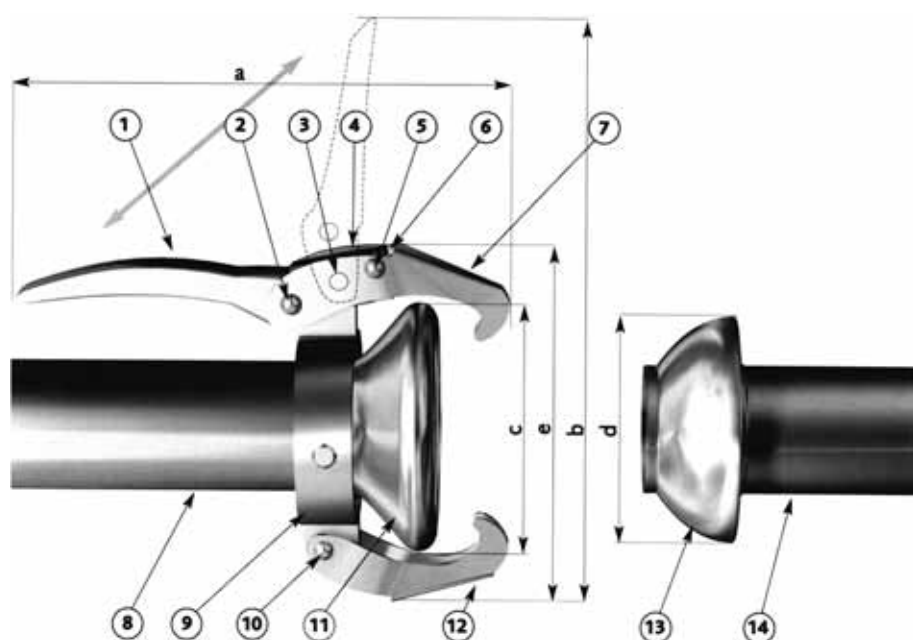
picture	code	DN [mm]	description
	GP-SMS5032	32	Seal
	GP-SMS5063	63	Material: NBR.

# INDUSTRIAL FITTINGS - couplings

## Lever couplings LAUX 42

LAUX 42 couplings due to their simple, robust and reliable construction are widely used in:

- chemical and paper industry as reloading couplings,
- in waste water transport trucks,
- for transfer and reloading of loose materials (grain, flour, animal feed, granules, cement, minerals),
- for temporary water and air installations in such industries as construction, mining, agriculture, etc.
- for pressure and vacuum pumps,
- irrigation systems.



- 1 - lever
- 2 - rivet for over hook
- 3 - rivet for under hook
- 4 - lock
- 5 - rivet for lock
- 6 - spring for lock
- 7 - over hook
- 8 - pipe
- 9 - ring
- 10 - rivet for under hook
- 11 - female part
- 12 - under hook
- 13 - male part
- 14 - pipe

### Max. working pressure

- for liquids 12.5 bar
- for air 8 bar
- vacuum-tight

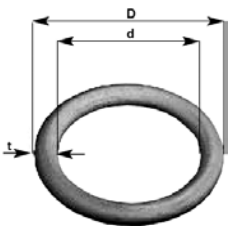
### Seals:

- EPDM from -50°C up to +120°C
- NBR from -40°C up to +100°C
- Viton from -30°C up to +250°C
- silicone from -70°C up to +250°C

EPDM seal is used as a standard.

size	a	b	c	d	e
38	186	230	72	67	105
48	240	295	104	100	155
60	240	305	115	109	165
76	285	360	135	129	205
102	285	380	162	158	235
133	380	490	193	179	295
152	380	530	218	200	315
204*	380	550	286	278	380

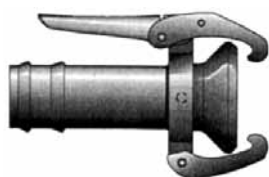
\* the female coupling has 3 levers

 KKG	code (EPDM)	code (NBR)	code (Viton)	code (silicone)	coupling size	d	D	t
	TF-KKG-038-E	TF-KKG-038-N	TF-KKG-038-V	-	38	54	70	8
	TF-KKG-048-E	TF-KKG-048-N	TF-KKG-048-V	TF-KKG-048-S	48	72	100	14
	TF-KKG-060-E	TF-KKG-060-N	TF-KKG-060-V	-	60	82	112	15
	TF-KKG-076-E	TF-KKG-076-N	TF-KKG-076-V	TF-KKG-076-S	76	100	130	15
	TF-KKG-102-E	TF-KKG-102-N	TF-KKG-102-V	TF-KKG-102-S	102	126	162	18
	TF-KKG-133-E	TF-KKG-133-N	TF-KKG-133-V	-	133	145	189	22
	TF-KKG-152-E	TF-KKG-152-N	TF-KKG-152-V	-	152	171	215	22
	-	TF-KKG-204-N	-	-	204	245	275	15

# INDUSTRIAL FITTINGS - couplings

## Lever couplings LAUX 42

Socket with hose tail



**KMS**

size		zinc-plated steel	aluminium	AISI 316L
connect. [mm]	hose i. [mm]			
38	32	-	-	X
38	40	TF-KMS-038-040	-	X
48	40	TF-KMS-048-040	X	X
48	50	TF-KMS-048-050	X	X
48	65	-	-	X
76	50	TF-KMS-076-050	X	X
76	65	TF-KMS-076-065	X	X
76	75	TF-KMS-076-075	X	X
76	80	TF-KMS-076-080	X	X
102	75	TF-KMS-102-075	X	-
102	80	TF-KMS-102-080	X	-
102	90	TF-KMS-102-090	X	-
102	100	TF-KMS-102-100	X	X
133	125	TF-KMS-133-125	X	X
152	150	TF-KMS-152-150	X	X
204	200	TF-KMS-204-200	-	X

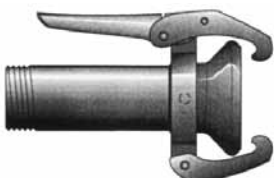
Plug with hose tail



**KVS**

size		zinc-plated steel	aluminium	AISI 316L
connect. [mm]	hose i. [mm]			
38	32	-	-	X
38	40	TF-KVS-038-040	-	X
48	40	TF-KVS-048-040	X	X
48	50	TF-KVS-048-050	X	X
48	65	-	-	X
76	50	TF-KVS-076-050	X	X
76	65	TF-KVS-076-065	X	X
76	75	TF-KVS-076-075	X	X
76	80	TF-KVS-076-080	X	X
102	75	TF-KVS-102-075	X	-
102	80	TF-KVS-102-080	X	-
102	90	TF-KVS-102-090	X	-
102	100	TF-KVS-102-100	X	X
133	125	TF-KVS-133-125	X	X
152	150	TF-KVS-152-150	X	X
204	200	TF-KVS-204-200	-	X

Socket with male thread



**KMG**

size		zinc-plated steel	aluminium	AISI 316L
connect. [mm]	thread [inch]			
38	1.1/4	TF-KMG-038-125	-	X
38	1.1/2	TF-KMG-038-150	-	X
48	1.1/2	TF-KMG-048-150	X	X
48	2	TF-KMG-048-200	X	X
76	2	TF-KMG-076-200	X	X
76	2.1/2	TF-KMG-076-250	X	X
76	3	TF-KMG-076-300	X	X
102	3	TF-KMG-102-300	X	X
102	4	TF-KMG-102-400	X	X
133	5	TF-KMG-133-500	-	X
152	4	TF-KMG-152-400	X	-
152	6	TF-KMG--152-600	-	X

Plug with male thread



**KVG**

size		zinc-plated steel	aluminium	AISI 316L
connect. [mm]	thread [inch]			
38	1.1/4	TF-KVG-038-125	-	X
38	1.1/2	TF-KVG-038-150	-	X
48	1.1/2	TF-KVG-048-150	X	X
48	2	TF-KVG-048-200	X	X
76	2	TF-KVG-076-200	X	X
76	2.1/2	TF-KVG-076-250	X	X
76	3	TF-KVG-076-300	X	X
102	3	TF-KVG-102-300	X	X
102	4	TF-KVG-102-400	X	X
133	5	TF-KVG-133-500	-	X
152	4	TF-KVG-152-400	X	-
152	6	TF-KVG--152-600	-	X

NOTE!

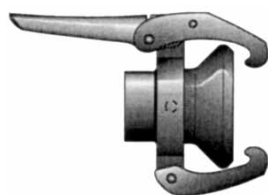
„X” mark in the tables indicates the availability of that particular material version.

Code example for aluminium: TF-KMS-038-040-AL, for AISI 316L steel: TF-KMS-038-040-SS.

# INDUSTRIAL FITTINGS - couplings

## Lever couplings LAUX 42

Socket with welding end



**KKM**

size		zinc-plated steel *	aluminium	AISI 316L
connect. [mm]	w. end [mm]			
38	38	TF-KKM-038-038	-	X
38	42	TF-KKM-038-042	-	-
48	50	TF-KKM-048-050	X	-
48	51	-	-	X
48	60	TF-KKM-048-060	-	-
76	60	TF-KKM-076-060	-	X
76	76	TF-KKM-076-076	X	X
76	84	-	-	X
76	89	TF-KKM-076-089	-	X
102	102	TF-KKM-102-102	X	-
102	103	-	-	X
102	114	TF-KKM-102-114	-	X
133	127	-	X	-
133	129	-	-	X
133	133	TF-KKM-133-133	-	-
133	139	TF-KKM-133-139	-	X
152	152	TF-KKM-152-152	X	-
152	154	-	-	X
152	168	TF-KKM-152-168	-	X
204	204	TF-KKM-204-204	-	X
204	219	TF-KKM-204-219	-	-

Plug with welding end

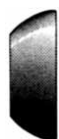


**KKV**

size		zinc-plated steel *	aluminium	AISI 316L
connect. [mm]	w. end [mm]			
38	38	TF-KKV-038-038	-	X
38	42	TF-KKV-038-042	-	-
48	50	TF-KKV-048-050	X	-
48	51	-	-	X
48	60	TF-KKV-048-060	-	-
76	60	TF-KKV-076-060	-	X
76	76	TF-KKV-076-076	X	X
76	84	-	-	X
76	89	TF-KKV-076-089	-	X
102	102	TF-KKV-102-102	X	-
102	103	-	-	X
102	114	TF-KKV-102-114	-	X
133	127	-	X	-
133	129	-	-	X
133	133	TF-KKV-133-133	-	-
133	139	TF-KKV-133-139	-	X
152	152	TF-KKV-152-152	X	-
152	154	-	-	X
152	168	TF-KKV-152-168	-	X
204	204	TF-KKV-204-204	-	X
204	219	TF-KKV-204-219	-	-

\* - non-galvanized version also available.

Socket end cap



**KXV**

size [mm]	zinc-plated steel	aluminium	AISI 316L
38	-	-	X
48	TF-KXV-048	X	X
76	TF-KXV-076	X	X
102	TF-KXV-102	X	X
133	TF-KXV-133	X	X
152	TF-KXV-152	X	X
204	TF-KXV-204	-	X

Plug end cap



**KXM**

size [mm]	zinc-plated steel	aluminium	AISI 316L
38	-	-	X
48	TF-KXM-048	X	X
76	TF-KXM-076	X	X
102	TF-KXM-102	X	X
133	TF-KXM-133	X	X
152	TF-KXM-152	X	X
204	TF-KXM-204	-	X

NOTE!

„X” mark in the tables indicates the availability of that particular material version.  
Code example for aluminium: TF-KMS-038-040-AL, for AISI 316L steel: TF-KMS-038-040-SS.



# INDUSTRIAL FITTINGS - couplings

## Lever couplings PERROT

PERROT coupling system is the most popular system of flexible connection in Poland. It was designed for irrigation purposes, yet over the last decades it has been used for many other applications.

PERROT couplings (pipes and fittings) are widely used in farming, gardening, industry, construction, road and tunnel building, groundwater drainage, sewage treatment plants, wastewater disposal and environmental engineering.

Advantages of the system:

- easy, one hand connection of the couplings,
- wide range of pipe diameters (50, 70, 108, 133, 159 mm),
- angular deflection of the coupling up to 15° to both sides,
- complete leak tightness even in contaminated couplings.

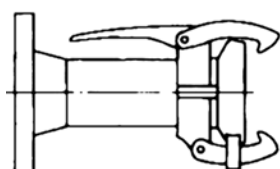
PERROT couplings are made of galvanized steel as a standard.

Couplings made of acid-resistant steel (AISI 316L) are available in two material versions: SUPRA and OPTIMA.

- SUPRA - female and male connecting parts made of AISI 316L steel, levers of the female part made of galvanized steel.
- OPTIMA - female and male connecting parts made of AISI 316L steel.

PERROT couplings made of acid resistant steel can be used to transfer e.g. alcohol, wine, vegetable oil, beverages, acids, lyes, petrochemical products, chemicals. Working pressure up to 10 bar.

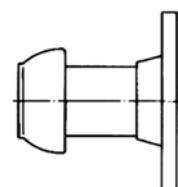
Socket with flange PN10



**KMF**

size		zinc-plated steel	AISI 316L (OPTIMA)
connect. [mm]	DN flange [mm]		
50	50	HC-KMF-050-050	HC-KMF-050-050-SS
70	65	HC-KMF-070-065	HC-KMF-070-065-SS
89	80	HC-KMF-089-080	HC-KMF-089-080-SS
108	100	HC-KMF-108-100	HC-KMF-108-100-SS
133	125	HC-KMF-133-125	HC-KMF-133-125-SS
159	150	HC-KMF-159-150	HC-KMF-159-150-SS

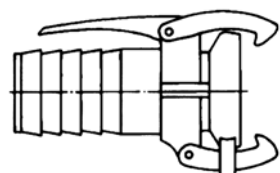
Plug with flange PN10



**KVF**

size		zinc-plated steel	AISI 316L (OPTIMA)
connect. [mm]	DN flange [mm]		
50	50	HC-KVF-050-050	HC-KVF-050-050-SS
70	65	HC-KVF-070-065	HC-KVF-070-065-SS
89	80	HC-KVF-089-080	HC-KVF-089-080-SS
108	100	HC-KVF-108-100	HC-KVF-108-100-SS
133	125	HC-KVF-133-125	HC-KVF-133-125-SS
159	150	HC-KVF-159-150	HC-KVF-159-150-SS

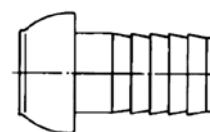
Socket with hose tail



**KMS**

size		zinc-plated steel	AISI 316L (OPTIMA)
connect. [mm]	hose tail [mm]		
50	50	HC-KMS-050-050	HC-KMS-050-050-SS
70	70	HC-KMS-070-070	HC-KMS-070-070-SS
89	75	HC-KMS-089-075	HC-KMS-089-075-SS
89	80	HC-KMS-089-080	HC-KMS-089-080-SS
89	90	HC-KMS-089-090	HC-KMS-089-090-SS
108	75	HC-KMS-108-075	-
108	100	HC-KMS-108-100	HC-KMS-108-100-SS
108	110	HC-KMS-108-110	HC-KMS-108-110-SS
133	125	HC-KMS-133-125	HC-KMS-133-125-SS
159	150	HC-KMS-159-150	HC-KMS-159-150-SS

Plug with hose tail



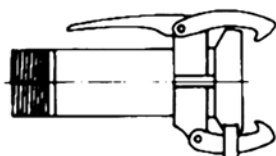
**KVS**

size		zinc-plated steel	AISI 316L (OPTIMA)
connect. [mm]	hose tail [mm]		
50	50	HC-KVS-050-050	HC-KVS-050-050-SS
70	70	HC-KVS-070-070	HC-KVS-070-070-SS
89	75	HC-KVS-089-075	HC-KVS-089-075-SS
89	80	HC-KVS-089-080	HC-KVS-089-080-SS
89	90	HC-KVS-089-090	HC-KVS-089-090-SS
108	75	HC-KVS-108-075	-
108	100	HC-KVS-108-100	HC-KVS-108-100-SS
108	110	HC-KVS-108-110	HC-KVS-108-110-SS
133	125	HC-KVS-133-125	HC-KVS-133-125-SS
159	150	HC-KVS-159-150	HC-KVS-159-150-SS

# INDUSTRIAL FITTINGS - couplings

## Lever couplings PERROT

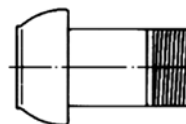
Socket with male thread



**KMG**

size		zinc-plated steel	AISI 316L (OPTIMA)
connect. [mm]	thread [inch]		
50	1.1/2	HC-KMG-050-150	HC-KMG-050-150-SS
50	2	HC-KMG-050-200	HC-KMG-050-200-SS
70	2	HC-KMG-070-200	HC-KMG-070-200-SS
70	2.1/2	HC-KMG-070-250	HC-KMG-070-250-SS
80	3	HC-KMG-089-300	HC-KMG-089-300-SS
108	3	HC-KMG-108-300	-
108	4	HC-KMG-108-400	HC-KMG-108-400-SS
133	5	HC-KMG-133-500	HC-KMG-133-500-SS
159	6	HC-KMG-159-600	HC-KMG-159-600-SS

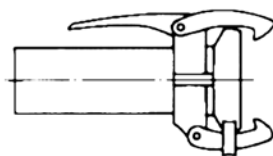
Plug with male thread



**KVG**

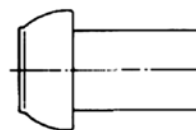
size		zinc-plated steel	AISI 316L (OPTIMA)
connect. [mm]	thread inch		
50	1.1/2	HC-KVG-050-150	HC-KVG-050-150-SS
50	2	HC-KVG-050-200	HC-KVG-050-200-SS
70	2	HC-KVG-070-200	HC-KVG-070-200-SS
70	2.1/2	HC-KVG-070-250	HC-KVG-070-250-SS
80	3	HC-KVG-089-300	HC-KVG-089-300-SS
108	3	HC-KVG-108-300	-
108	4	HC-KVG-108-400	HC-KVG-108-400-SS
133	5	HC-KVG-133-500	HC-KVG-133-500-SS
159	6	HC-KVG-159-600	HC-KVG-159-600-SS

Socket with welding end



connection size [mm]	zinc-plated steel	AISI 316L (OPTIMA)
50	HC-KMR-050	HC-KMR-050-SS
70	HC-KMR-070	HC-KMR-070-SS
89	HC-KMR-089	HC-KMR-089-SS
108	HC-KMR-108	HC-KMR-108-SS
133	HC-KMR-133	HC-KMR-133-SS
159	HC-KMR-159	HC-KMR-159-SS

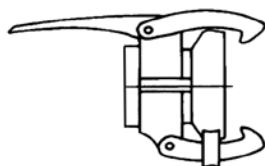
Plug with welding end



**KVR**

connection size [mm]	zinc-plated steel	AISI 316L (OPTIMA)
50	HC-KVR-050	HC-KVR-050-SS
70	HC-KVR-070	HC-KVR-070-SS
89	HC-KVR-089	HC-KVR-089-SS
108	HC-KVR-108	HC-KVR-108-SS
133	HC-KVR-133	HC-KVR-133-SS
159	HC-KVR-159	HC-KVR-159-SS

Plug end cap



**KMX**

connection size [mm]	zinc-plated steel	AISI 316L (OPTIMA)
50	HC-KMX-050	HC-KMX-050-SS
70	HC-KMX-070	HC-KMX-070-SS
89	HC-KMX-089	HC-KMX-089-SS
108	HC-KMX-108	HC-KMX-108-SS
133	HC-KMX-133	HC-KMX-133-SS
159	HC-KMX-159	HC-KMX-159-SS

Socket end cap



**K VX**

connection size [mm]	zinc-plated steel	AISI 316L (OPTIMA)
50	HC-K VX-050	HC-K VX-050-SS
70	HC-K VX-070	HC-K VX-070-SS
89	HC-K VX-089	HC-K VX-089-SS
108	HC-K VX-108	HC-K VX-108-SS
133	HC-K VX-133	HC-K VX-133-SS
159	HC-K VX-159	HC-K VX-159-SS

# INDUSTRIAL FITTINGS - couplings

## Lever couplings KLAUDIA




**Material:** Aluminium  
**Seal:** EPDM  
**Working press.:** Up to 8 bar (water), 3 bar (air)  
**Working temp.:** From -25°C up to +60°C

KLAUDIA couplings are widely used for pneumatic unloading of cement railcars. Other application: IGE wellpoint system (dewatering installation), farms, water carts, sprinkler irrigation systems, construction and industry. The design of KLAUDIA coupling is similar to PERROT coupling, but they are not interchangeable.


Main advantages of the system:

- easy, one hand connection of the couplings,
- wide range of pipe diameters (51, 70, 89, 108, 133 mm),
- angular deflection of the coupling up to 15° to both sides,
- complete leak tightness also of dirty couplings.

Socket with male thread

 <b>KMG</b>		
code	size [mm]	thread size [inch]
KL-KMG-051-200	51	2
KL-KMG-051-250	51	2.1/2
KL-KMG-051-300	51	3
KL-KMG-051-400	51	4
KL-KMG-070-200	70	2
KL-KMG-070-250	70	2.1/2
KL-KMG-070-300	70	3
KL-KMG-070-400	70	4
KL-KMG-089-200	89	2
KL-KMG-089-250	89	2.1/2
KL-KMG-089-300	89	3
KL-KMG-089-400	89	4
KL-KMG-108-200	108	2
KL-KMG-108-250	108	2.1/2
KL-KMG-108-300	108	3
KL-KMG-108-400	108	4
KL-KMG-133-200	133	2
KL-KMG-133-250	133	2.1/2
KL-KMG-133-300	133	3
KL-KMG-133-400	133	4

Plug with male thread

 <b>KVG</b>		
code	size [mm]	thread size [inch]
KL-KVG-051-200	51	2
KL-KVG-051-250	51	2.1/2
KL-KVG-051-300	51	3
KL-KVG-051-400	51	4
KL-KVG-070-200	70	2
KL-KVG-070-250	70	2.1/2
KL-KVG-070-300	70	3
KL-KVG-070-400	70	4
KL-KVG-089-200	89	2
KL-KVG-089-250	89	2.1/2
KL-KVG-089-300	89	3
KL-KVG-089-400	89	4
KL-KVG-108-200	108	2
KL-KVG-108-250	108	2.1/2
KL-KVG-108-300	108	3
KL-KVG-108-400	108	4
KL-KVG-133-200	133	2
KL-KVG-133-250	133	2.1/2
KL-KVG-133-300	133	3
KL-KVG-133-400	133	4

# INDUSTRIAL FITTINGS - couplings

## Lever couplings KLAUDIA

Socket with hose tail



**KMS**

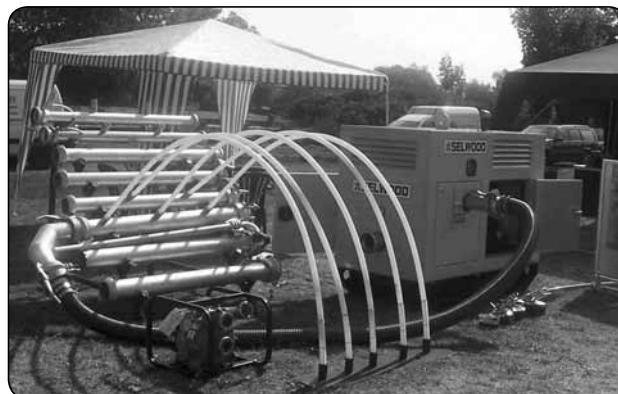
code	size [mm]	hose I.D. [mm]
KL-KMS-051-050	51	50
KL-KMS-051-075	51	75
KL-KMS-051-080	51	80
KL-KMS-051-089	51	89
KL-KMS-051-100	51	100
KL-KMS-051-110	51	110
KL-KMS-070-050	70	50
KL-KMS-070-075	70	75
KL-KMS-070-080	70	80
KL-KMS-070-089	70	89
KL-KMS-070-100	70	100
KL-KMS-070-110	70	110
KL-KMS-089-050	89	50
KL-KMS-089-075	89	75
KL-KMS-089-080	89	80
KL-KMS-089-089	89	89
KL-KMS-089-100	89	100
KL-KMS-089-110	89	110
KL-KMS-108-050	108	50
KL-KMS-108-075	108	75
KL-KMS-108-080	108	80
KL-KMS-108-089	108	89
KL-KMS-108-100	108	100
KL-KMS-108-110	108	110
KL-KMS-133-050	133	50
KL-KMS-133-075	133	75
KL-KMS-133-080	133	80
KL-KMS-133-089	133	89
KL-KMS-133-100	133	100
KL-KMS-133-110	133	110

Plug with hose tail



**KVS**

code	size [mm]	hose I.D. [mm]
KL-KVS-051-050	51	50
KL-KVS-051-075	51	75
KL-KVS-051-080	51	80
KL-KVS-051-089	51	89
KL-KVS-051-100	51	100
KL-KVS-051-110	51	110
KL-KVS-070-050	70	50
KL-KVS-070-075	70	75
KL-KVS-070-080	70	80
KL-KVS-070-089	70	89
KL-KVS-070-100	70	100
KL-KVS-070-110	70	110
KL-KVS-089-050	89	50
KL-KVS-089-075	89	75
KL-KVS-089-080	89	80
KL-KVS-089-089	89	89
KL-KVS-089-100	89	100
KL-KVS-089-110	89	110
KL-KVS-108-050	108	50
KL-KVS-108-075	108	75
KL-KVS-108-080	108	80
KL-KVS-108-089	108	89
KL-KVS-108-100	108	100
KL-KVS-108-110	108	110
KL-KVS-133-050	133	50
KL-KVS-133-075	133	75
KL-KVS-133-080	133	80
KL-KVS-133-089	133	89
KL-KVS-133-100	133	100
KL-KVS-133-110	133	110



# INDUSTRIAL FITTINGS - couplings

## Lever couplings KLAUDIA

Socket with flange PN10



**KMF**

code	size [mm]	flange DN
KL-KMF-051-050	51	50
KL-KMF-051-080	51	80
KL-KMF-070-050	70	50
KL-KMF-070-080	70	80
KL-KMF-089-080	89	80
KL-KMF-089-100	89	100
KL-KMF-108-080	108	80
KL-KMF-108-100	108	100
KL-KMF-133-100	133	100
KL-KMF-133-150	133	150

Plug with flange PN10



**KVF**

code	size [mm]	flange DN
KL-KVF-051-050	51	50
KL-KVF-051-080	51	80
KL-KVF-070-050	70	50
KL-KVF-070-080	70	80
KL-KVF-089-080	89	80
KL-KVF-089-100	89	100
KL-KVF-108-080	108	80
KL-KVF-108-100	108	100
KL-KVF-133-100	133	100
KL-KVF-133-150	133	150

Plug end cap



**KMX**

code	size [mm]
KL-KMX-051	51
KL-KMX-070	70
KL-KMX-089	89
KL-KMX-108	108
KL-KMX-133	133

Socket end cap



**K VX**

code	size [mm]
KL-K VX-051	51
KL-K VX-070	70
KL-K VX-089	89
KL-K VX-108	108
KL-K VX-133	133

Socket with throttle valve and hose tail



**KPMS**

code	size [mm]	hose I.D. [mm]
KL-KPMS-089-050	89	50
KL-KPMS-089-075	89	75
KL-KPMS-089-080	89	80
KL-KPMS-089-089	89	89
KL-KPMS-089-100	89	100
KL-KPMS-089-110	89	110

Socket seal



**KMU**

code	size [mm]
KL-KMU-051	51
KL-KMU-070	70
KL-KMU-089	89
KL-KMU-108	108
KL-KMU-133	133


# INDUSTRIAL FITTINGS - couplings

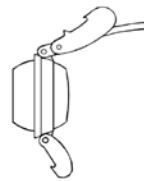
## Lever couplings BAUER

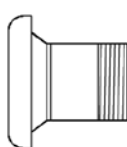


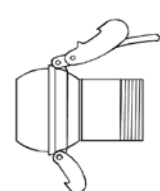
**Material:** Galvanized steel  
**Seal:** NR-SBR  
**Working press.:** 20 bar - sizes up to 89 mm  
                           12 bar - sizes above 89 mm  
**Working temp.:** From -20°C up to +50°C

BAUER couplings (pipes and fittings) are widely used in farming, gardening, industry, construction, road and tunnel building, groundwater drainage, sewage treatment plants, wastewater disposal and environmental engineering. Coupling design allows angular deflection of the connected coupling (max. 30° up to 108 mm, 20° in bigger sizes). Available in a wide pipe diameter range (50, 76, 89, 108, 133, 159, 194 mm).

Plug end cap	
	
<b>B.5B</b>	
code	size
OM-B5B-050	50
OM-B5B-076	76
OM-B5B-089	89
OM-B5B-108	108
OM-B5B-133	133
OM-B5B-159	159
OM-B5B-194	194

Socket end cap	
	
<b>B.6B</b>	
code	size
OM-B6B-050	50
OM-B6B-076	76
OM-B6B-089	89
OM-B6B-108	108
OM-B6B-133	133
OM-B6B-159	159
OM-B6B-194	194

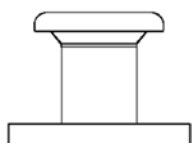
Socket with male thread		
		
<b>B.14</b>		
code	size	thread size [inch]
OM-B14-050-150	50	1.1/2
OM-B14-050-200	50	2
OM-B14-076-250	76	2.1/2
OM-B14-076-300	76	3
OM-B14-089-300	89	3
OM-B14-108-400	108	4
OM-B14-133-500	133	5
OM-B14-159-600	159	6
OM-B14-194-800	194	8

Plug with male thread		
		
<b>B.15</b>		
code	size	thread size [inch]
OM-B15-050-150	50	1.1/2
OM-B15-050-200	50	2
OM-B15-076-250	76	2.1/2
OM-B15-076-300	76	3
OM-B15-089-300	89	3
OM-B15-108-400	108	4
OM-B15-133-500	133	5
OM-B15-159-600	159	6
OM-B15-194-800	194	8

# INDUSTRIAL FITTINGS - couplings

## Lever couplings BAUER

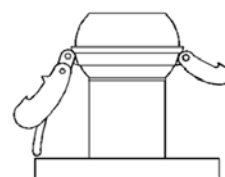
Socket with flange PN10



**B.45**

code	size	flange DN
OM-B45-050-040	50	40
OM-B45-076-065	76	65
OM-B45-089-080	89	80
OM-B45-108-100	108	100
OM-B45-133-125	133	125
OM-B45-159-150	159	150
OM-B45-194-200	194	200

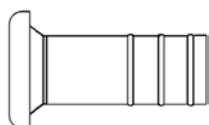
Plug with flange PN10



**B.46**

code	size	flange DN
OM-B46-050-040	50	40
OM-B46-076-065	76	65
OM-B46-089-080	89	80
OM-B46-108-100	108	100
OM-B46-133-125	133	125
OM-B46-159-150	159	150
OM-B46-194-200	194	200

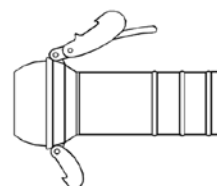
Socket with hose tail



**B.7**

code	size	hose I.D. [mm]
OM-B7-050-050	50	50
OM-B7-076-063	76	63
OM-B7-076-076	76	76
OM-B7-089-076	89	76
OM-B7-089-089	89	89
OM-B7-108-100	108	100
OM-B7-108-108	108	108
OM-B7-133-125	133	125
OM-B7-159-150	159	150
OM-B7-159-159	159	159
OM-B7-194-200	194	200

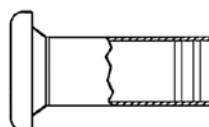
Plug with hose tail



**B.8**

code	size	hose I.D. [mm]
OM-B8-050-050	50	50
OM-B8-076-063	76	63
OM-B8-076-076	76	76
OM-B8-089-076	89	76
OM-B8-089-089	89	89
OM-B8-108-100	108	100
OM-B8-108-108	108	108
OM-B8-133-125	133	125
OM-B8-159-150	159	150
OM-B8-159-159	159	159
OM-B8-194-200	194	200

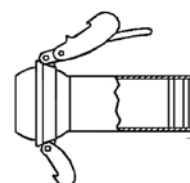
Socket for PE pipe



**B.51**

code	size	pipe diameter [mm]
OM-B51-050-063	50	63
OM-B51-076-063	76	63
OM-B51-089-110	89	110
OM-B51-108-110	108	110

Plug for PE pipe




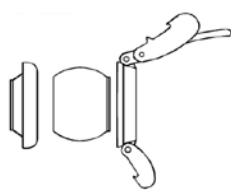
**B.52**

code	size	pipe diameter [mm]
OM-B52-050-063	50	63
OM-B52-076-063	76	63
OM-B52-089-110	89	110
OM-B52-108-110	108	110

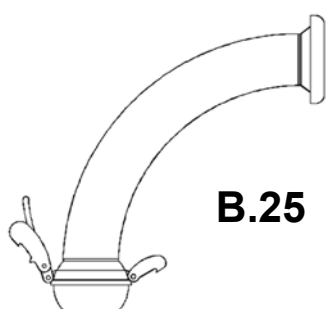
## INDUSTRIAL FITTINGS - couplings

### Lever couplings BAUER

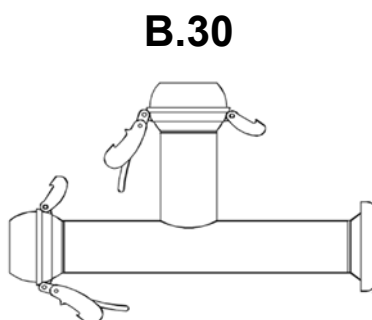
Socket seal	
	
<b>B.3</b>	
code	size
OM-B3-050	50
OM-B3-076	76
OM-B3-089	89
OM-B3-108	108
OM-B3-133	133
OM-B3-159	159
OM-B3-194	194

Complete black steel coupling	
	
<b>B.1</b>	
code	size
OM-B1-050	50
OM-B1-076	76
OM-B1-089	89
OM-B1-108	108
OM-B1-133	133
OM-B1-159	159
OM-B1-194	194

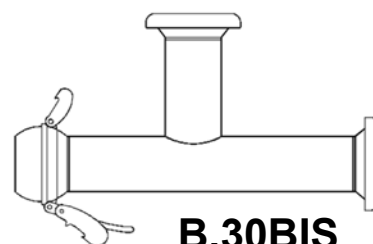
Many other elements of BAUER system are also available. For more information, please contact Sales or Technical Department of TUBES INTERNATIONAL®.



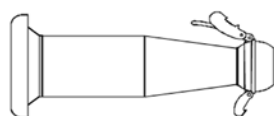
**B.25**



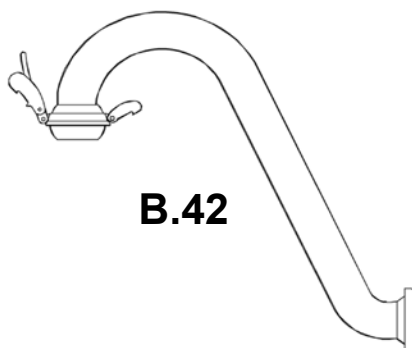
**B.30**



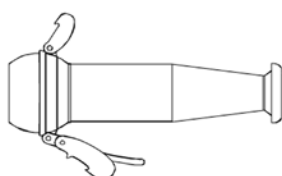
**B.30BIS**



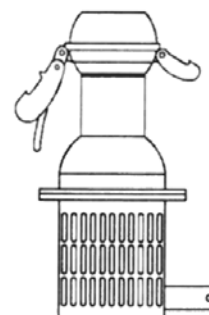
**B.39**



**B.42**



**B.40**

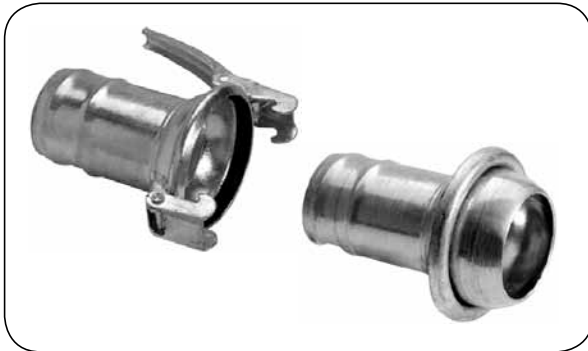


**B.61**



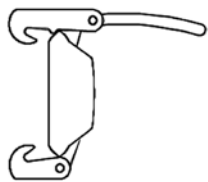
# INDUSTRIAL FITTINGS - couplings

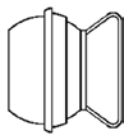
## Lever couplings FERRARI

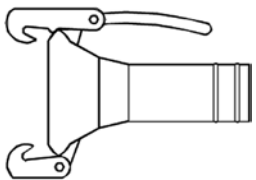


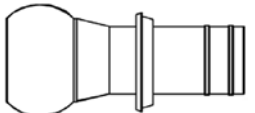
**Material:** Galvanized steel  
**Seal:** NR-SBR  
**Working press.:** 10 bar - sizes 48, 60 mm  
                           9 bar - size 80 mm  
                           8 bar - size 100 mm  
                           7 bar - size 120 mm  
                           6 bar - size 150 mm  
**Working temp.:** From -20°C up to +50°C

FERRARI couplings (pipes and fittings) are widely used in farming, gardening, industry, construction, road and tunnel building, groundwater drainage, sewage treatment plants, wastewater disposal and environmental engineering. Coupling design allows angular deflection of the connected coupling (max. 26° in small sizes, 20° in big sizes). Available in a wide pipe diameter range (48, 60, 80, 100, 120, 150 mm), as a version with three hooks (for higher working pressure) and made of AISI 304 steel.

Plug end cap	
	
<b>F.5B</b>	
code	size
OM-F5B-048	48
OM-F5B-060	60
OM-F5B-080	80
OM-F5B-100	100
OM-F5B-120	120
OM-F5B-150	150

Socket end cap	
	
<b>F.6B</b>	
code	size
OM-F6B-048	48
OM-F6B-060	60
OM-F6B-080	80
OM-F6B-100	100
OM-F6B-120	120
OM-F6B-150	150

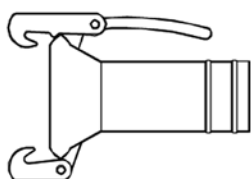
Reducing socket with hose tail		
		
<b>F.10</b>		
code	size	hose I.D. [mm]
OM-F10-060-050	60	50
OM-F10-060-063	60	63
OM-F10-080-060	80	60
OM-F10-080-076	80	76
OM-F10-100-080	100	80
OM-F10-100-090	100	90
OM-F10-100-102	100	102
OM-F10-120-100	120	100
OM-F10-120-125	120	125

Reducing plug with hose tail		
		
<b>F.11</b>		
code	size	hose I.D. [mm]
OM-F11-060-050	60	50
OM-F11-060-063	60	63
OM-F11-080-060	80	60
OM-F11-080-076	80	76
OM-F11-100-080	100	80
OM-F11-100-090	100	90
OM-F11-100-102	100	102
OM-F11-120-100	120	100
OM-F11-120-125	120	125

# INDUSTRIAL FITTINGS - couplings

## Lever couplings FERRARI

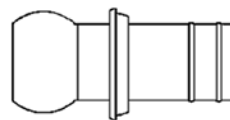
Socket with hose tail



**F.7**

code	size	hose I.D. [mm]
OM-F7-048-050	48	50
OM-F7-060-060	60	60
OM-F7-080-080	80	80
OM-F7-100-100	100	100
OM-F7-120-120	120	120
OM-F7-150-150	150	150

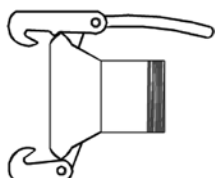
Plug with hose tail



**F.8**

code	size	hose I.D. [mm]
OM-F8-048-050	48	50
OM-F8-060-060	60	60
OM-F8-080-080	80	80
OM-F8-100-100	100	100
OM-F8-120-120	120	120
OM-F8-150-150	150	150

Socket with male thread



**F.14**

code	size	thread size [inch]
OM-F14-048-150	48	1.1/2
OM-F14-060-200	60	2
OM-F14-080-300	80	3
OM-F14-100-250	100	2.1/2
OM-F14-100-400	100	4
OM-F14-120-250	120	2.1/2
OM-F14-120-500	120	5
OM-F14-150-600	150	6

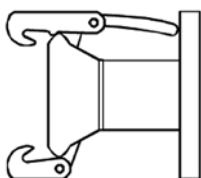
Plug with male thread



**F.15**

code	size	thread size [inch]
OM-F15-048-150	48	1.1/2
OM-F15-060-200	60	2
OM-F15-080-300	80	3
OM-F15-100-250	100	2.1/2
OM-F15-100-400	100	4
OM-F15-120-250	120	2.1/2
OM-F15-120-500	120	5
OM-F15-150-600	150	6

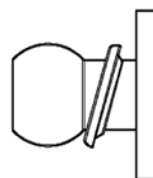
Socket with flange PN10



**F.45**

code	size	flange DN
OM-F45-060-065	60	65
OM-F45-080-080	80	80
OM-F45-100-100	100	100
OM-F45-120-125	120	125
OM-F45-150-150	150	150

Plug with flange PN10



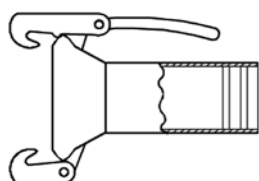
**F.46**

code	size	flange DN
OM-F46-060-065	60	65
OM-F46-080-080	80	80
OM-F46-100-100	100	100
OM-F46-120-125	120	125
OM-F46-150-150	150	150

## INDUSTRIAL FITTINGS - couplings

### Lever couplings FERRARI

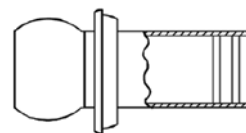
Socket for PE pipe



**F. 51**

code	size	pipe diameter [mm]
OM-F51-060-050	60	50
OM-F51-060-063	60	63
OM-F51-080-075	80	75
OM-F51-080-090	80	90
OM-F51-100-090	100	90
OM-F51-100-110	100	110
OM-F51-120-110	120	110

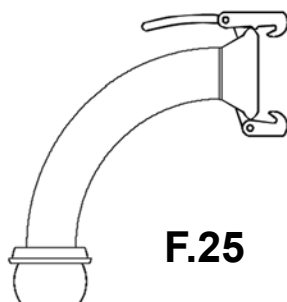
Plug for PE pipe



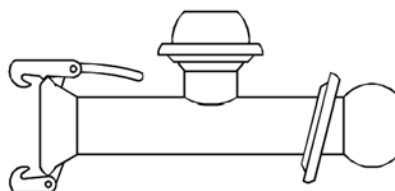
**F.52**

code	size	pipe diameter [mm]
OM-F52-060-050	60	50
OM-F52-060-063	60	63
OM-F52-080-075	80	75
OM-F52-080-090	80	90
OM-F52-100-090	100	90
OM-F52-100-110	100	110
OM-F52-120-110	120	110

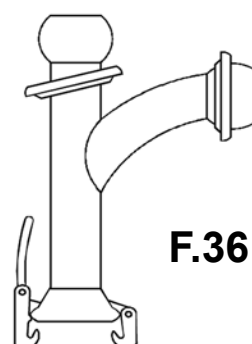
Many other elements of FERRARI system are also available. For more information, please contact Sales or Technical Department of TUBES INTERNATIONAL®.



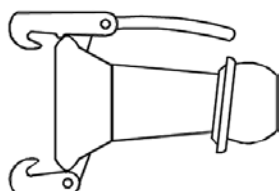
**F.25**



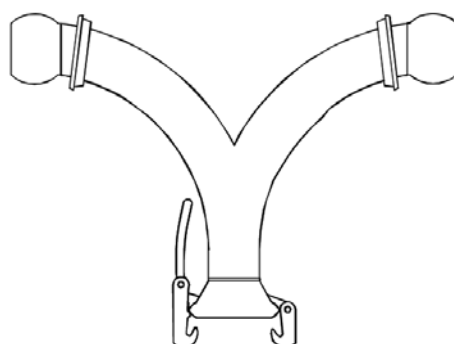
**F.30**



**F.36**



**F.39**



**F.35**



**F.40**

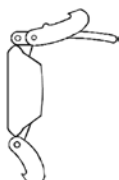
## INDUSTRIAL FITTINGS - couplings


### Lever couplings ANFOR

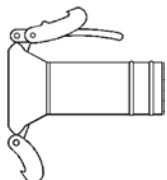


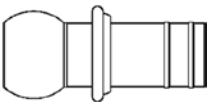
**Material:** Galvanized steel  
**Seal:** NR-SBR  
**Working press.:** 19 bar - size 60 mm  
                           16 bar - size 80 mm  
                           14 bar - size 100 mm  
                           13 bar - size 120 mm  
                           12 bar - size 150 mm  
                           6 bar - size 200 mm  
                           5 bar - sizes 250, 300, 400 mm  
**Working temp.:** From -20°C up to +50°C

ANFOR couplings (pipes and fittings) are widely used in farming, gardening, industry, construction, road and tunnel building, groundwater drainage, sewage treatment plants, wastewater disposal and environmental engineering. Coupling design allows angular deflection of the connected coupling (max. 22° in small sizes, 16° in big sizes). Available in a wide pipe diameter range (60, 80, 100, 120, 150, 200, 250, 300, 400 mm) and as a version with three hooks (for higher working pressure).

Plug end cap	
	
<b>A.5B</b>	
code	size
OM-A5B-060	60
OM-A5B-080	80
OM-A5B-100	100
OM-A5B-120	120
OM-A5B-150	150
OM-A5B-200	200
OM-A5B-250	250
OM-A5B-300	300

Socket end cap	
	
<b>A.6B</b>	
code	size
OM-A6B-060	60
OM-A6B-080	80
OM-A6B-100	100
OM-A6B-120	120
OM-A6B-150	150
OM-A6B-200	200
OM-A6B-250	250
OM-A6B-300	300

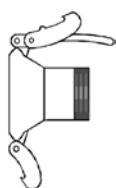
Socket with hose tail		
		
<b>A.7</b>		
code	size	hose I.D. [mm]
OM-A7-060-060	60	60
OM-A7-080-080	80	80
OM-A7-100-100	100	100
OM-A7-120-120	120	120
OM-A7-150-150	150	150
OM-A7-200-200	200	200
OM-A7-250-250	250	250
OM-A7-300-300	300	300
OM-A7-400-400	400	400

Plug with hose tail		
		
<b>A.8</b>		
code	size	hose I.D. [mm]
OM-A8-060-060	60	60
OM-A8-080-080	80	80
OM-A8-100-100	100	100
OM-A8-120-120	120	120
OM-A8-150-150	150	150
OM-A8-200-200	200	200
OM-A8-250-250	250	250
OM-A8-300-300	300	300
OM-A8-400-400	400	400

## INDUSTRIAL FITTINGS - couplings

### Lever couplings ANFOR

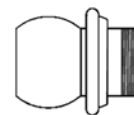
Socket with male thread



**A.14**

code	size	thread size [inch]
OM-A14-060-200	60	2
OM-A14-080-300	80	3
OM-A14-100-400	100	4
OM-A14-120-500	120	5
OM-A14-150-600	150	6
OM-A14-200-800	200	8

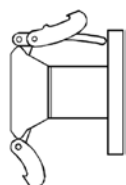
Plug with male thread



**A.15**

code	size	thread size [inch]
OM-A15-060-200	60	2
OM-A15-080-300	80	3
OM-A15-100-400	100	4
OM-A15-120-500	120	5
OM-A15-150-600	150	6
OM-A15-200-800	200	8

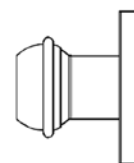
Socket with flange PN10



**A.45**

code	size	flange DN
OM-A45-060-065	60	65
OM-A45-080-080	80	80
OM-A45-100-100	100	100
OM-A45-120-125	120	125
OM-A45-150-150	150	150
OM-A45-200-200	200	200
OM-A45-250-250	250	250
OM-A45-300-300	300	300
OM-A45-400-400	400	400

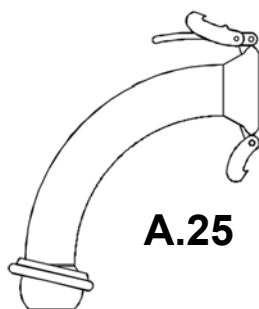
Plug with flange PN10



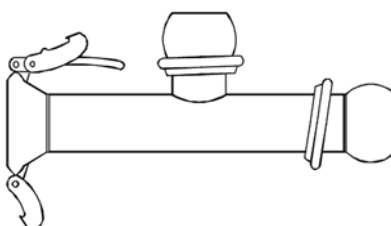
**A.46**

code	size	flange DN
OM-A46-060-065	60	65
OM-A46-080-080	80	80
OM-A46-100-100	100	100
OM-A46-120-125	120	125
OM-A46-150-150	150	150
OM-A46-200-200	200	200
OM-A46-250-250	250	250
OM-A46-300-300	300	300
OM-A46-400-400	400	400

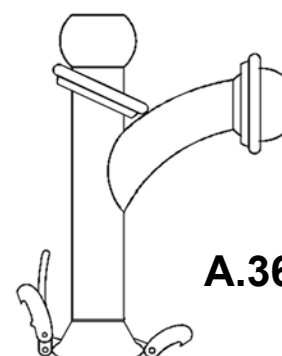
Many other elements of ANFOR system are also available. For more information, please contact Sales or Technical Department of TUBES INTERNATIONAL®.



**A.25**



**A.30**



**A.36**

# INDUSTRIAL FITTINGS - couplings

## MSL couplings with EN 14420-3 (DIN 2817) safety clamps

**Coupling material:** St (carbon steel), SS (AISI 316Ti), Ms (brass), Al (aluminium)

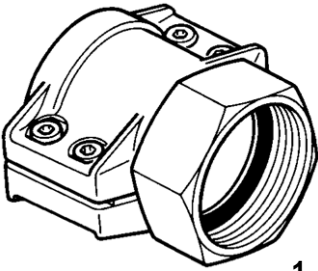
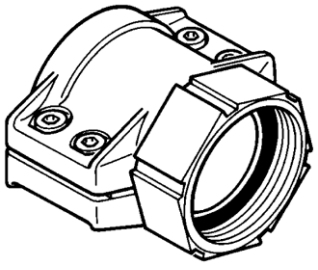
**Seal:** Polyurethane (for SS version - PTFE)

**Working pressure:** 25 bar (for Al version - 16 bar)

A complete hose coupling with aluminium safety clamp and female thread with a swivel nut (for NPT - fixed female thread).

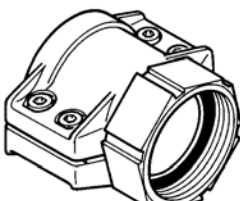
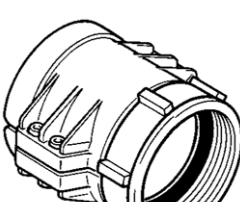
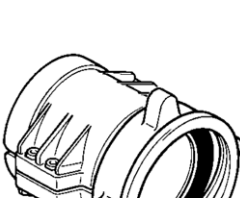
Safety clamps made of other materials and for other hose wall thickness are in "INDUSTRIAL FITTINGS - clip, clamps, ferrules" chapter (only RS-636... and RS-637... clamps).

DN - hose inside diameter x hose wall thickness.

picture	code	DN [mm]	thread	material	seal	weight [kg]	pic.
	GD-MSLB-013-013-ST-CL-05	13 x 5 (1/2")	1/2" BSP	St	flat	0.18	1
	GD-MSLB-013-013-SS-CL-05			SS	flat	0.18	1
	GD-MSLB-013-013-MS-CL-05			Ms	flat	0.19	1
	GD-MSLBC-013-013-MS-CL-05			Ms	cone	0.19	1
	GD-MSLNT-013-013-ST-CL-05		1/2" NPT	St	thread	0.20	1
	GD-MSLMC-022-013-MS-CL-05		M22x1.5	Ms	cone	0.19	1
	GD-MSLB-020-013-SS-CL-05	19 x 6 (3/4")	3/4" BSP	SS	flat	0.23	1
	GD-MSLB-020-013-MS-CL-05			Ms	flat	0.24	1
	GD-MSLB-020-019-ST-CL-06		3/4" BSP	St	flat	0.23	1
	GD-MSLB-020-019-SS-CL-06			SS	flat	0.20	1
	GD-MSLB-020-019-MS-CL-06			Ms	flat	0.21	1
	GD-MSLBC-020-019-MS-CL-06			Ms	cone	0.22	1
	GD-MSLNT-020-019-ST-CL-06		3/4" NPT	St	thread	0.26	1
	GD-MSLMC-030-019-MS-CL-06		M30x1.5	Ms	cone	0.27	1
	GD-MSLB-025-019-SS-CL-06		1" BSP	SS	flat	0.24	1
	GD-MSLB-025-019-MS-CL-06			Ms	flat	0.24	1
	GD-MSLB-025-025-ST-CL-06	25 x 6 (1")	1" BSP	St	flat	0.32	1
	GD-MSLB-025-025-SS-CL-06			SS	flat	0.28	1
	GD-MSLB-025-025-MS-CL-06			Ms	flat	0.26	1
	GD-MSLBC-025-025-MS-CL-06			Ms	cone	0.27	1
	GD-MSLNT-025-025-ST-CL-06		1" NPT	St	thread	0.37	1
	GD-MSLNS-025-025-MS-CL-06		1" NPS	Ms	flat	0.26	1
	GD-MSLMC-038-025-MS-CL-06		M38x1.5	Ms	cone	0.39	1
	GD-MSLB-032-025-ST-CL-06		1.1/4" BSP	St	flat	0.37	1
	GD-MSLB-032-025-SS-CL-06			SS	flat	0.34	1
	GD-MSLB-032-025-MS-CL-06			Ms	flat	0.32	1
	GD-MSLB-038-025-SS-CL-06		1.1/2" BSP	SS	flat	0.43	1
	GD-MSLB-038-025-MS-CL-06			Ms	flat	0.42	2
	GD-MSLB-032-032-ST-CL-06	32 x 6 (1.1/4")	1.1/4" BSP	St	flat	0.39	1
	GD-MSLB-032-032-SS-CL-06			SS	flat	0.35	1
	GD-MSLB-032-032-MS-CL-06			Ms	flat	0.33	1
	GD-MSLBC-032-032-MS-CL-06			Ms	cone	0.37	1
	GD-MSLNT-032-032-ST-CL-06		1.1/4" NPT	St	thread	0.45	1
	GD-MSLNS-032-032-MS-CL-06		1.1/4" NPS	Ms	flat	0.33	1
	GD-MSLMC-045-032-MS-CL-06		M45x1.5	Ms	cone	0.49	1
	GD-MSLB-038-032-SS-CL-06		1.1/2" BSP	SS	flat	0.44	1
	GD-MSLB-038-032-MS-CL-06			Ms	flat	0.41	2
	GD-MSLB-050-032-SS-CL-06		2" BSP	SS	flat	0.56	1
	GD-MSLB-050-032-MS-CL-06			Ms	flat	0.58	2

# INDUSTRIAL FITTINGS - couplings

## MSL couplings with EN 14420-3 (DIN 2817) safety clamps

picture	code	DN [mm]	thread	material	seal	weight [kg]	pic.	
	GD-MSLB-038-035-MS-CL-06	35 x 6	1.1/2" BSP	Ms	flat	0.43	2	
	GD-MSLB-050-035-MS-CL-06		2" BSP	Ms	flat	0.58	2	
	GD-MSLB-038-038-ST-CL-65	38 x 6.5 (1.1/2")	1.1/2" BSP	St	flat	0.46	1	
	GD-MSLB-038-038-SS-CL-65			SS	flat	0.42	1	
	GD-MSLB-038-038-MS-CL-65			Ms	flat	0.41	2	
	GD-MSLBC-038-038-MS-CL-65			Ms	cone	0.44	2	
	GD-MSLNT-038-038-ST-CL-65		1.1/2" NPT	St	thread	0.47	1	
	GD-MSLNS-038-038-MS-CL-65		1.1/2" NPS	Ms	flat	0.40	2	
	GD-MSLMC-052-038-MS-CL-65		M52x1.5	Ms	cone	0.52	1	
	GD-MSLB-050-038-SS-CL-65		2" BSP	SS	flat	0.58	2	
	GD-MSLB-050-038-MS-CL-65			Ms	flat	0.55	2	
			GD-MSLB-038-040-SS-CL-07	40 x 7	1.1/2" BSP	SS	flat	0.55
GD-MSLB-038-040-MS-CL-07		Ms	flat			0.55	2	
GD-MSLB-050-040-SS-CL-07		2" BSP	SS		flat	0.70	2	
GD-MSLB-050-040-MS-CL-07			Ms		flat	0.65	2	
GD-MSLB-050-045-MS-CL-07		45 x 7	2" BSP	Ms	flat	0.75	2	
		GD-MSLB-050-050-ST-CL-08	50 x 8 (2")	2" BSP	St	flat	0.85	1
		GD-MSLB-050-050-SS-CL-08			SS	flat	0.71	2
		GD-MSLB-050-050-MS-CL-08			Ms	flat	0.72	2
		GD-MSLBC-050-050-MS-CL-08			Ms	cone	0.74	2
		GD-MSLNT-050-050-ST-CL-08		2" NPT	St	thread	0.83	1
		GD-MSLNS-050-050-MS-CL-08		2" NPS	Ms	flat	0.72	2
		GD-MSLMC-065-050-MS-CL-08		M65x2	Ms	cone	0.90	1
	GD-MSLB-065-050-SS-CL-08	2.1/2" BSP		SS	flat	0.98	2	
	GD-MSLB-065-050-MS-CL-08			Ms	flat	0.93	2	
		GD-MSLB-065-063-SS-CL-07		63 x 8 65 x 7 (2.1/2")	2.1/2" BSP	SS	flat	1.20
		GD-MSLB-065-063-MS-CL-07	Ms			flat	1.20	2
		GD-MSLBC-065-065-MS-CL-07	Ms			cone	1.25	2
GD-MSLNS-065-063-MS-CL-07		2.1/2" NPS	Ms		flat	1.30	1	
GD-MSLMC-078-065-MS-CL-07		M78x2	Ms		cone	1.45	1	
GD-MSLB-080-065-MS-CL-07		3" BSP	Ms		flat	1.55	2	
GD-MSLB-080-075-ST-CL-08		75 x 8 (3")	3" BSP		St	flat	1.40	1
GD-MSLB-080-075-SS-CL-08					SS	flat	1.52	2
GD-MSLB-080-075-MS-CL-08					Ms	flat	1.60	2
GD-MSLBC-080-075-MS-CL-08					Ms	cone	1.65	2
GD-MSLNS-080-075-MS-CL-08			3" NPS	Ms	flat	1.55	2	
GD-MSLMC-090-075-MS-CL-08			M90x2	Ms	cone	1.50	2	
GD-MSL-DIN-075-SS-CL-08	5.1/2" DIN 11		SS	flat	5.10	5		
GD-MSL-DIN-075-MS-CL-08			Ms	flat	5.30	5		
GD-MSL-DIN-075-AL-CL-08		Al	flat	2.45	6			
	GD-MSLB-080-080-MS-CL-08	80 x 8	3" BSP	Ms	flat	1.55	2	
	GD-MSLMC-100-080-MS-CL-08	100 x 8 (4")	4" BSP	Ms	cone	2.10	1	
	GD-MSLB-100-100-SS-CL-08			SS	flat	3.90	3	
	GD-MSLB-100-100-MS-CL-08		4" NPS	Ms	flat	3.85	4	
	GD-MSLNS-100-100-MS-CL-08			Ms	flat	3.85	4	
	GD-MSL-DIN-100-ST-CL-08		5.1/2" DIN 11	St	flat	6.20	5	
	GD-MSL-DIN-100-SS-CL-08			SS	flat	5.00	5	
	GD-MSL-DIN-100-MS-CL-08			Ms	flat	5.60	5	
	GD-MSL-DIN-100-AL-CL-08			Al	flat	3.10	6	

# INDUSTRIAL FITTINGS - couplings

## VSL couplings with EN 14420-3 (DIN 2817) safety clamps

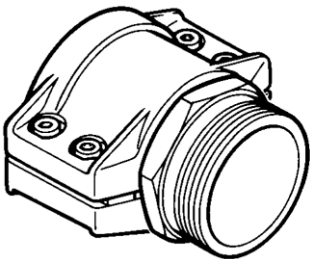
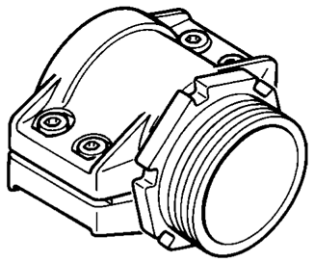
**Coupling material:** St (carbon steel), SS (AISI 316Ti), Ms (brass), Al (aluminium)

**Working pressure:** 25 bar (for Al version - 16 bar)

A complete hose coupling with an aluminium safety clamp and male thread.

Safety clamps made of other materials and for other hose wall thickness are in "INDUSTRIAL FITTINGS - clip, clamps, ferrules" chapter (only RS 636... and RS-637... clamps).

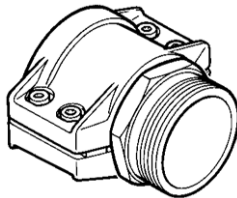
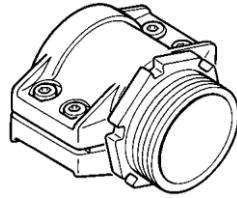
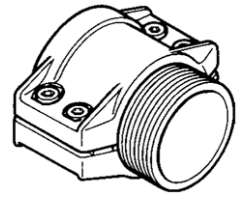
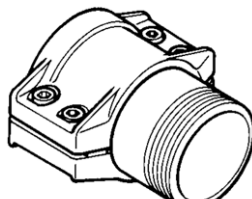
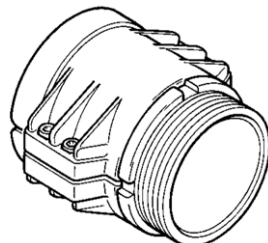
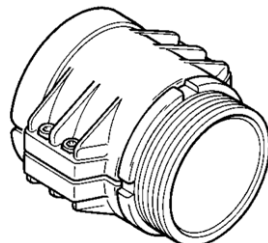
DN - hose inside diameter x hose wall thickness.

picture	code	DN [mm]	thread	material	seal	weight [kg]	pic.
	GD-VSLBT-013-013-ST-CL-05	13 x 5 (1/2")	1/2" BSPT	St	thread/flat	0.17	1
	GD-VSLBT-013-013-SS-CL-05			SS	thread/flat	0.17	1
	GD-VSLBT-013-013-MS-CL-05			Ms	thread/flat	0.18	1
	GD-VSLNT-013-013-ST-CL-05		1/2" NPT	St	thread	0.18	1
	GD-VSLNT-013-013-SS-CL-05			SS	thread	0.18	1
	GD-VSLNT-013-013-MS-CL-05			Ms	thread	0.19	1
	GD-VSLBT-020-019-ST-CL-06	19 x 6 (3/4")	3/4" BSPT	St	thread/flat	0.24	1
	GD-VSLBT-020-019-SS-CL-06			SS	thread/flat	0.24	1
	GD-VSLBT-020-019-MS-CL-06			Ms	thread/flat	0.25	1
	GD-VSLNT-020-019-ST-CL-06		3/4" NPT	St	thread	0.24	1
	GD-VSLNT-020-019-SS-CL-06			SS	thread	0.24	1
	GD-VSLNT-020-019-MS-CL-06			Ms	thread	0.25	1
	GD-VSLB-025-019-SS-CL-06	25 x 6 (1")	1" BSP	SS	flat	0.28	1
	GD-VSLB-025-019-MS-CL-06			Ms	flat	0.29	1
	GD-VSLB-025-025-ST-CL-06		1" BSP	St	flat	0.30	1
	GD-VSLB-025-025-SS-CL-06			SS	flat	0.30	1
	GD-VSLB-025-025-MS-CL-06			Ms	flat	0.30	1
	GD-VSLBT-025-025-MS-CL-06		1" BSPT	Ms	thread/flat	0.33	1
	GD-VSLNT-025-025-ST-CL-06		1" NPT	St	thread	0.33	1
	GD-VSLNT-025-025-SS-CL-06			SS	thread	0.33	1
	GD-VSLNT-025-025-MS-CL-06			Ms	thread	0.34	1
	GD-VSLB-032-025-SS-CL-06		1.1/4" BSP	SS	flat	0.39	1
	GD-VSLB-032-025-MS-CL-06			Ms	flat	0.37	1
	GD-VSLB-038-025-SS-CL-06		1.1/2" BSP	SS	flat	0.43	1
	GD-VSLB-038-025-MS-CL-06			Ms	flat	0.45	1
	GD-VSLB-050-025-SS-CL-06		2" BSP	SS	flat	0.63	1
	GD-VSLB-050-025-MS-CL-06			Ms	flat	0.67	1
	GD-VSLB-032-032-ST-CL-06	32 x 6 (1.1/4")	1.1/4" BSP	St	flat	0.37	1
	GD-VSLB-032-032-SS-CL-06			SS	flat	0.37	1
	GD-VSLB-032-032-MS-CL-06			Ms	flat	0.38	1
	GD-VSLBT-032-032-MS-CL-06		1.1/4" BSPT	Ms	thread/flat	0.41	1
	GD-VSLNT-032-032-ST-CL-06		1.1/4" NPT	St	thread	0.39	1
	GD-VSLNT-032-032-SS-CL-06			SS	thread	0.39	1
	GD-VSLNT-032-032-MS-CL-06			Ms	thread	0.41	1
	GD-VSLB-038-032-SS-CL-06		1.1/2" BSP	SS	flat	0.42	1
	GD-VSLB-038-032-MS-CL-06			Ms	flat	0.39	1
	GD-VSLB-050-032-SS-CL-06		2" BSP	SS	flat	0.58	1
	GD-VSLB-050-032-MS-CL-06			Ms	flat	0.51	1
	GD-VSLB-038-035-MS-CL-06	35 x 6	1.1/2" BSP	Ms	flat	0.44	1
	GD-VSLB-050-035-MS-CL-06		2" BSP	Ms	flat	0.54	1





# INDUSTRIAL FITTINGS - couplings

## VSL couplings with EN 14420-3 (DIN 2817) safety clamps

picture	code	DN [mm]	thread	material	seal	weight [kg]	pic.		
	GD-VSLB-038-038-ST-CL-65	38 x 6.5 (1.1/2")	1.1/2" BSP	St	flat	0.39	1		
	GD-VSLB-038-038-SS-CL-65			SS	flat	0.40	1		
	GD-VSLB-038-038-MS-CL-65			Ms	flat	0.44	2		
	GD-VSLBT-038-038-MS-CL-65		1.1/2" BSPT	Ms	thread/flat	0.46	2		
	GD-VSLNT-038-038-ST-CL-65			St	thread	0.42	1		
	GD-VSLNT-038-038-SS-CL-65			SS	thread	0.42	1		
	GD-VSLNT-038-038-MS-CL-65		1.1/2" NPT	Ms	thread	0.44	2		
	GD-VSLB-050-038-SS-CL-65			SS	flat	0.52	1		
	GD-VSLB-050-038-MS-CL-65			Ms	flat	0.55	2		
			GD-VSLB-038-040-SS-CL-07	40 x 7	1.1/2" BSP	SS	flat	0.54	1
GD-VSLB-038-040-MS-CL-07		Ms	flat			0.56	1		
GD-VSLB-050-040-SS-CL-07		2" BSP	SS		flat	0.66	1		
GD-VSLB-050-040-MS-CL-07			Ms		flat	0.66	1		
GD-VSLB-050-045-MS-CL-07			Ms		flat	0.82	1		
		GD-VSLB-050-050-ST-CL-08	50 x 8 (2")	2" BSP	St	flat	0.67	1	
		GD-VSLB-050-050-SS-CL-08			SS	flat	0.67	2	
		GD-VSLB-050-050-MS-CL-08			Ms	flat	0.73	2	
		GD-VSLB-050-050-PP-CL-08			Pp	flat	0.33	3	
		GD-VSLBT-050-050-MS-CL-08		2" BSPT	Ms	thread/flat	0.76	2	
	GD-VSLNT-050-050-ST-CL-08	St			thread	0.70	1		
	GD-VSLNT-050-050-SS-CL-08	2" NPT		SS	thread	0.70	1		
	GD-VSLNT-050-050-MS-CL-08			Ms	thread	0.78	2		
	GD-VSLB-065-050-SS-CL-08	2.1/2" BSP		SS	flat	0.98	1		
	GD-VSLB-065-050-MS-CL-08			Ms	flat	0.86	1		
	GD-VSLB-065-065-SS-CL-07	63 x 8 65 x 7 (2.1/2")	2.1/2" BSP	SS	flat	1.10	2		
	GD-VSLB-065-065-MS-CL-07			Ms	flat	1.10	2		
	GD-VSLBT-065-065-MS-CL-07		2.1/2" BSPT	Ms	thread/flat	1.20	2		
	GD-VSLNT-065-065-SS-CL-07			SS	thread	1.20	5		
	GD-VSLNT-065-065-MS-CL-07		2.1/2" NPT	Ms	thread	1.10	2		
	GD-VSLB-080-065-SS-CL-07			SS	flat	1.21	2		
	GD-VSLB-080-065-MS-CL-07		3" BSP	Ms	flat	1.25	2		
	GD-VSLB-080-075-ST-CL-08			St	flat	1.45	5		
			GD-VSLB-080-075-SS-CL-08	75 x 8 (3")	3" BSP	SS	flat	1.33	2
			GD-VSLB-080-075-MS-CL-08			Ms	flat	1.40	2
GD-VSLB-080-075-AL-CL-08		Al	flat			0.81	1		
GD-VSLB-080-075-PP-CL-08		Pp	flat			0.62	3		
GD-VSLBT-080-075-MS-CL-08		Ms	thread/flat			1.50	2		
GD-VSLNT-080-075-ST-CL-08		3" BSPT	St		thread	1.95	4		
GD-VSLNT-080-075-SS-CL-08			SS		thread	1.45	5		
GD-VSLNT-080-075-MS-CL-08			Ms		thread	1.50	2		
GD-VSLB-080-080-SS-CL-08		3" BSP	SS		flat	1.25	2		
GD-VSLB-080-080-MS-CL-08			Ms		flat	1.30	2		
	GD-VSLB-100-100-ST-CL-08	100 x 8 (4")	4" BSP	St	flat	3.10	4		
	GD-VSLB-100-100-SS-CL-08			SS	flat	3.00	2		
	GD-VSLB-100-100-MS-CL-08			Ms	flat	3.21	2		
	GD-VSLB-100-100-AL-CL-08			Al	flat	2.05	5		
	GD-VSLBT-100-100-MS-CL-08		4" BSPT	Ms	thread/flat	3.26	2		
	GD-VSLNT-100-100-ST-CL-08			St	thread	3.45	4		
	GD-VSLNT-100-100-SS-CL-08		4" NPT	SS	thread	3.00	5		
	GD-VSLNT-100-100-MS-CL-08			Ms	thread	3.26	2		

## INDUSTRIAL FITTINGS - couplings

### VRS, VSL couplings

picture	code	thread size [inch]	hose DN [mm]	material
	GD-VRSB-025-025-MS	1	25	brass
	GD-VRSB-025-025-SS			AISI 316
	GD-VRSB-032-032-MS	1.1/4	32	brass
	GD-VRSB-032-032-SS			AISI 316
	GD-VRSB-038-038-MS	1.1/2	38	brass
	GD-VRSB-038-038-SS			AISI 316
	GD-VRSB-050-050-MS	2	50	brass
	GD-VRSB-050-050-SS			AISI 316
	GD-VRSB-063-063-MS	2.1/2	63	brass
	GD-VRSB-063-063-SS			AISI 316
	GD-VRSB-075-075-MS	3	75	brass
	GD-VRSB-075-075-SS			AISI 316
	GD-VRSB-100-100-MS	4	100	brass
	GD-VRSB-100-100-SS			AISI 316
	GD-VSLB-025-025-MS	1	25	brass
	GD-VSLB-025-025-SS			AISI 316
	GD-VSLB-032-032-MS	1.1/4	32	brass
	GD-VSLB-032-032-SS			AISI 316
	GD-VSLB-038-038-MS	1.1/2	38	brass
	GD-VSLB-038-038-SS			AISI 316
	GD-VSLB-050-050-MS	2	50	brass
	GD-VSLB-050-050-SS			AISI 316
	GD-VSLB-065-065-MS	2.1/2	63	brass
	GD-VSLB-065-065-SS			AISI 316
	GD-VSLB-080-075-MS	3	75	brass
	GD-VSLB-080-075-SS			AISI 316
	GD-VSLB-100-100-MS	4	100	brass
	GD-VSLB-100-100-SS			AISI 316

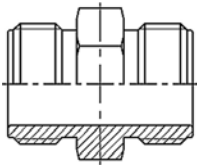
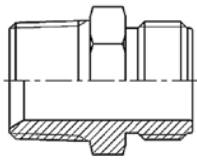
# INDUSTRIAL FITTINGS - couplings

## Threaded couplings - ADN adapters

**Material:** Galvanized steel, AISI 316 steel, brass

**Working press.:** 25 bar

Adapter with male thread at both ends.


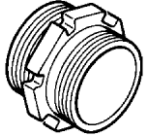

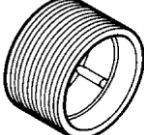
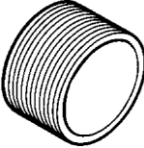
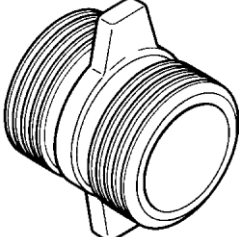
picture	code (galvanized steel)	code (AISI 316)	code (brass)	thread size [inch]
BSP thread  	TI-ADN-01-050-050	TI-ADN-01-050-050-SS	TI-ADN-01-050-050-MS	1/2
	TI-ADN-01-075-075	TI-ADN-01-075-075-SS	TI-ADN-01-075-075-MS	3/4
	TI-ADN-01-100-100	TI-ADN-01-100-100-SS	TI-ADN-01-100-100-MS	1
	TI-ADN-01-125-125	TI-ADN-01-125-125-SS	TI-ADN-01-125-125-MS	1.1/4
	TI-ADN-01-150-150	TI-ADN-01-150-150-SS	TI-ADN-01-150-150-MS	1.1/2
	TI-ADN-01-200-200	TI-ADN-01-200-200-SS	TI-ADN-01-200-200-MS	2
	TI-ADN-01-250-250	TI-ADN-01-250-250-SS	TI-ADN-01-250-250-MS	2.1/2
	TI-ADN-01-300-300	TI-ADN-01-300-300-SS	TI-ADN-01-300-300-MS	3
	TI-ADN-01-400-400	TI-ADN-01-400-400-SS	TI-ADN-01-400-400-MS	4
BSPT / BSP thread  	TI-ADN-02-050-050	TI-ADN-02-050-050-SS	TI-ADN-02-050-050-MS	1/2
	TI-ADN-02-075-075	TI-ADN-02-075-075-SS	TI-ADN-02-075-075-MS	3/4
	TI-ADN-02-100-100	TI-ADN-02-100-100-SS	TI-ADN-02-100-100-MS	1
	TI-ADN-02-125-125	TI-ADN-02-125-125-SS	TI-ADN-02-125-125-MS	1.1/4
	TI-ADN-02-150-150	TI-ADN-02-150-150-SS	TI-ADN-02-150-150-MS	1.1/2
	TI-ADN-02-200-200	TI-ADN-02-200-200-SS	TI-ADN-02-200-200-MS	2
	TI-ADN-02-250-250	TI-ADN-02-250-250-SS	TI-ADN-02-250-250-MS	2.1/2
	TI-ADN-02-300-300	TI-ADN-02-300-300-SS	TI-ADN-02-300-300-MS	3
	TI-ADN-02-400-400	TI-ADN-02-400-400-SS	TI-ADN-02-400-400-MS	4

# INDUSTRIAL FITTINGS - couplings

## Threaded couplings - DN adapters

**Material:** SS (AISI 316Ti), Ms (brass), Al (aluminium)

Adapter with male thread at both ends.


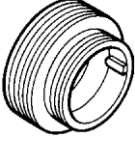
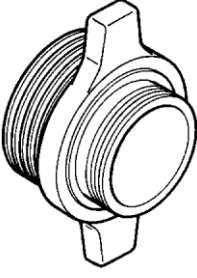
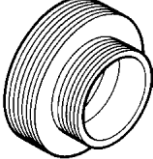
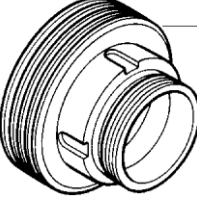
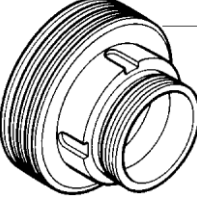
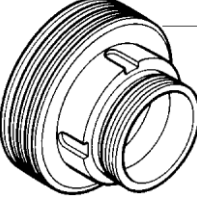
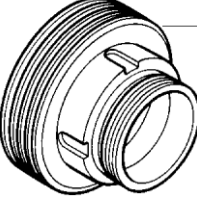
picture	code	thread	material	weight [kg]	pic.
 <b>1</b>	RS-410050050120	1/2" BSP	SS	0.05	1
	RS-410050050130		Ms	0.05	1
	RS-410075075120	3/4" BSP	SS	0.07	1
	RS-410075075130		Ms	0.08	1
	RS-410100100120	1" BSP	SS	0.13	1
	RS-410100100130		Ms	0.13	1
 <b>2</b>	RS-410125125120	1.1/4" BSP	SS	0.16	1
	RS-410125125130		Ms	0.16	1
	RS-410150150120	1.1/2" BSP	SS	0.25	1
	RS-410150150130		Ms	0.21	2
 <b>3</b>	RS-410200200120	2" BSP	SS	0.33	1
	RS-410200200130		Ms	0.39	2
	RS-430200200130		Ms	0.28	4
	RS-420200200130		Ms	0.28	5
	RS-430200200140		Al	0.10	4
	RS-420200200140		Al	0.09	5
 <b>4</b>	RS-410250250120	2.1/2" BSP	SS	0.55	1
	RS-410250250130		Ms	0.77	1
	RS-430250250130		Ms	0.43	4
	RS-420250250130		Ms	0.37	5
	RS-430250250140		Al	0.12	4
	RS-420250250140		Al	0.10	5
 <b>5</b>	RS-410300300120	3" BSP	SS	0.62	1
	RS-410300300130		Ms	0.67	2
	RS-430300300130		Ms	0.55	4
	RS-420300300130		Ms	0.56	5
	RS-430300300140		Al	0.19	4
	RS-420300300140		Al	0.20	5
 <b>6</b>	RS-410400400120	4" BSP	SS	1.05	3
	RS-410400400130		Ms	1.70	2
	RS-430400400130		Ms	1.05	4
	RS-420400400130		Ms	0.85	5
	RS-430400400140		Al	0.34	4
	RS-420400400140		Al	0.33	5
	RS-410550550530	5.1/2" DIN 11	Ms	5.15	6
	RS-410550550540		Al	1.80	6

# INDUSTRIAL FITTINGS - couplings

## Threaded couplings - RN adapters

**Material:** SS (AISI 316Ti), Ms (brass), Al (aluminium)

Reducing adapter with male thread at both ends.

picture	code	thread		material	seal	weight [kg]	pic.
 <b>1</b>	RS-440050075112	1/2" BSP	3/4" BSP	SS	flat	0.08	1
	RS-440050075113			Ms	flat	0.09	1
	RS-440075100112	3/4" BSP	1" BSP	SS	flat	0.13	1
	RS-440075100113			Ms	flat	0.14	1
	RS-441100381143	1" BSP	M38x1.5	Ms	flat/cone	0.16	1
 <b>2</b>	RS-440100125112		1.1/4" BSP	SS	flat	0.20	1
	RS-440100125113			Ms	flat	0.22	1
	RS-440100150112		1.1/2" BSP	SS	flat	0.25	1
	RS-440100150113			Ms	flat	0.22	1
	RS-440100200112		2" BSP	SS	flat	0.47	1
 <b>3</b>	RS-440100200113			Ms	flat	0.31	1
	RS-441125451143	1.1/4" BSP	M45x1.5	Ms	flat/cone	0.22	1
	RS-440125150112		1.1/2" BSP	SS	flat	0.22	1
	RS-440125150113			Ms	flat	0.24	1
	RS-440125200112		2" BSP	SS	flat	0.41	1
 <b>4</b>	RS-440125200113			Ms	flat	0.34	1
	RS-441150521143	1.1/2" BSP	M52x1.5	Ms	flat/cone	0.30	1
	RS-440150200112		2" BSP	SS	flat	0.35	1
	RS-440150200113			Ms	flat	0.32	1
	RS-441200652143	2" BSP	M65x2	Ms	flat/cone	0.57	1
 <b>5</b>	RS-440200250112		2.1/2" BSP	SS	flat	0.69	1
	RS-440200250113			Ms	flat	0.62	1
	RS-440200300112		3" BSP	SS	flat	0.72	4
	RS-440200300113			Ms	flat	0.66	1
	RS-450200300113			Ms	flat	0.49	2
	RS-450200300114			Al	flat	0.17	2
 <b>5</b>	RS-441250782143	2.1/2" BSP	M78x2	Ms	flat/cone	0.49	1
	RS-460250300112		3" BSP	SS	flat	0.59	4
	RS-440250300113			Ms	flat	0.85	1
	RS-450250300113			Ms	flat	0.55	2
	RS-441300902143	3" BSP	M90x2	Ms	flat/cone	0.77	1
 <b>5</b>	RS-460300400112		4" BSP	SS	flat	1.05	4
	RS-450300400113			Ms	flat	0.79	2
	RS-450300400114			Al	flat	0.27	2
	RS-440300550152		5.1/2" DIN 11	SS	flat	3.75	5
	RS-440300550154			Al	flat	1.00	1
 <b>5</b>	RS-440400550152	4" BSP	5.1/2" DIN 11	SS	flat	2.95	5
	RS-440400550154			Al	flat	1.35	3

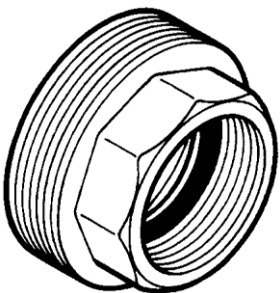
# INDUSTRIAL FITTINGS - couplings

## Threaded couplings - RS adapters

**Material:** SS (AISI 316/316 Ti), Ms (brass), Al (aluminium)

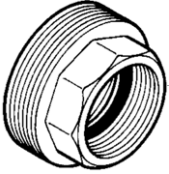
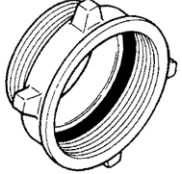
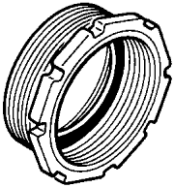
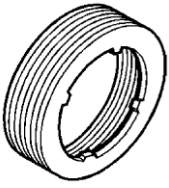
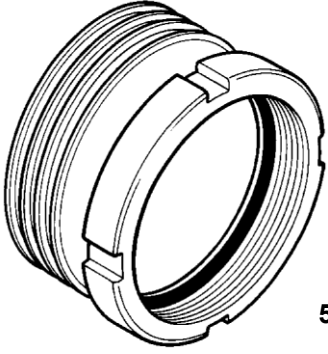
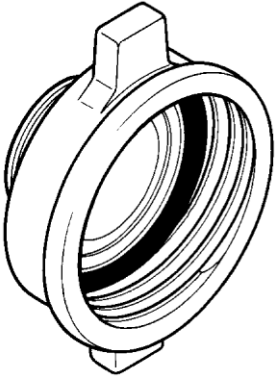
**Seal:** Polyurethane (for SS version - PTFE)

Reducing adapter with female and male thread.

picture	code	female thread	male thread	material	seal	weight [kg]	pic.
	RS-500050050113	1/2" BSP	1/2" BSP	Ms	flat	0.06	1
	RS-500050075112		3/4" BSP	SS	flat	0.10	1
	RS-500050075113			Ms	flat	0.11	1
	RS-500075075113	3/4" BSP	3/4" BSP	Ms	flat	0.07	1
	RS-500075100112		1" BSP	SS	flat	0.14	1
	RS-500075100113			Ms	flat	0.13	1
	RS-500100075112	1" BSP	3/4" BSP	SS	flat	0.09	1
	RS-500100075113		1" BSP	Ms	flat	0.09	1
	RS-500100100113			Ms	flat	0.08	1
	RS-500100100133		1" NPT	Ms	flat/thread	0.11	1
	RS-500100125112		1.1/4" BSP	SS	flat	0.14	1
	RS-500100125113			Ms	flat	0.15	1
	RS-500100150112		1.1/2" BSP	SS	flat	0.21	1
	RS-500100150113			Ms	flat	0.23	1
	RS-500100200112		2" BSP	SS	flat	0.32	1
	RS-500100200113			Ms	flat	0.24	1
	RS-500100100313	1" NPT	1" BSP	Ms	thread/flat	0.15	1
	RS-500125100112	1.1/4" BSP	1" BSP	SS	flat	0.13	1
	RS-500125100113			Ms	flat	0.14	1
	RS-500125125113		1.1/4" BSP	Ms	flat	0.15	1
	RS-500125150112			SS	flat	0.22	1
	RS-500125150113		1.1/2" BSP	Ms	flat	0.24	1
	RS-500125200112			SS	flat	0.27	1
	RS-500125200113		Ms	flat	0.31	1	
	RS-500150100112	1.1/2" BSP	1" BSP	SS	flat	0.23	1
	RS-500150100113			Ms	flat	0.25	1
	RS-500150125112		1.1/4" BSP	SS	flat	0.22	1
	RS-500150125113			Ms	flat	0.23	1
	RS-500150150113		1.1/2" BSP	Ms	flat	0.25	1
	RS-500150200112			SS	flat	0.21	1
	RS-500150200113	Ms	flat	0.27	1		
	RS-500200100112	2" BSP	1" BSP	SS	flat	0.27	1
	RS-500200100113			Ms	flat	0.30	1
RS-500200125112	1.1/4" BSP		SS	flat	0.25	1	
RS-500200125113			Ms	flat	0.32	1	
RS-500200150112	1.1/2" BSP		SS	flat	0.26	1	
RS-500200150113			Ms	flat	0.35	1	
RS-500200200113	2" BSP		Ms	flat	0.37	1	
RS-500200200133			2" NPT	Ms	flat/thread	0.52	1
RS-500200250112	G 2.1/2"		SS	flat	0.40	1	
RS-500200250113			Ms	flat	0.52	2	
RS-500200300112	3" BSP		SS	flat	0.63	1	
RS-500200300113			Ms	flat	0.41	1	
RS-500200200313	2" NPT	2" BSP	Ms	thread/flat	0.39	1	

# INDUSTRIAL FITTINGS - couplings


## Threaded couplings - RS adapters

picture	code	female thread	male thread	material	seal	weight [kg]	pic.
 <b>1</b>	RS-500250200112	2. 1/2" BSP	2" BSP	SS	flat	0.44	1
	RS-500250200113			Ms	flat	0.53	2
	RS-500250250113		2. 1/2" BSP	Ms	flat	0.64	1
	RS-500250300112		3" BSP	SS	flat	0.50	1
	RS-500250300113			Ms	flat	0.48	3
 <b>2</b>	RS-500300200112	3" BSP	2" BSP	SS	flat	0.53	1
	RS-500300200113			Ms	flat	0.85	3
	RS-500300250112		2. 1/2" BSP	SS	flat	0.56	1
	RS-500300250113			Ms	flat	0.82	3
 <b>3</b>	RS-500300300113		3" BSP	Ms	flat	0.78	3
	RS-500300300133		3" NPT	Ms	flat/thread	0.87	1
	RS-500300400112		4" BSP	SS	flat	1.05	1
	RS-500300400113			Ms	flat	0.98	3
 <b>4</b>	RS-510300400113		5. 1/2" DIN 11	Ms	flat	0.93	4
	RS-500300550152			SS	flat	3.40	5
	RS-500300300313	3" NPT	3" BSP	Ms	thread/flat	0.96	1
	RS-500400300112	4" BSP	3" BSP	SS	flat	0.93	1
 <b>5</b>	RS-500400300113			Ms	flat	1.15	2
	RS-500400400113		G 4"	Ms	flat	1.60	1
	RS-500400400133		4" NPT	Ms	flat/thread	1.35	1
	RS-500400550152		5. 1/2" DIN 11	SS	flat	2.95	5
	RS-500400550153			Ms	flat	3.55	6
	RS-500400550154			Al	flat	1.45	6
	RS-500400400313	4" NPT	4" BSP	Ms	thread/flat	1.55	1
 <b>6</b>	RS-500550200512	5. 1/2" DIN 11	2" BSP	SS	flat	2.60	6
	RS-500550200513			Ms	flat	2.90	6
	RS-500550300512	3" BSP	3" BSP	SS	flat	2.55	6
	RS-500550300513			Ms	flat	2.95	6
	RS-500550300514			Al	flat	0.96	6
	RS-500550400512	4" BSP	4" BSP	SS	flat	2.40	6
	RS-500550400513			Ms	flat	2.85	6
	RS-500550400514			Al	flat	0.97	6

# INDUSTRIAL FITTINGS - couplings

## Threaded couplings - flat seals

GD flat seal is designed to seal the connection between a male parallel thread (e.g. BSP male thread) and a female parallel thread (e.g. BSP female thread). The seal must be placed in the seat of the female thread in a way which prevents an undesired non-centric position. It should adhere to the flat surface of the seat in the female thread and also to the stub with the male thread. Working pressure 25 bar.

picture	code	dimensions [mm]	size [inch]	DN [mm]	material	weight [kg]
	GD-013-NP	20x13x2	1/2" BSP	13	Novapress*	0,001
	GD-013-PTFE				PTFE	0,001
	GD-013-PU				polyurethane	0,001
	GD-013-VI				Viton	0,001
	GD-020-NP	26x19x2	3/4" BSP	20	Novapress*	0,001
	GD-020-PTFE				PTFE	0,001
	GD-020-PU				polyurethane	0,001
	GD-020-VI				Viton	0,001
	GD-025-NP	33x24x2	1" BSP	25	Novapress*	0,002
	GD-025-PTFE				PTFE	0,002
	GD-025-PU				polyurethane	0,001
	GD-025-VI				Viton	0,002
	GD-032-NP	42x33x2	1.1/4" BSP	32	Novapress*	0,002
	GD-032-PTFE				PTFE	0,003
	GD-032-PU				polyurethane	0,002
	GD-032-VI				Viton	0,002
	GD-038-NP	48x39x2	1.1/2" BSP	38	Novapress*	0,003
	GD-038-PTFE				PTFE	0,003
	GD-038-PU				polyurethane	0,002
	GD-038-VI				Viton	0,003
	GD-050-EP	60x49x2	2" BSP	50	EPDM	0,004
	GD-050-NP				Novapress*	0,004
	GD-050-PTFE				PTFE	0,004
	GD-050-PU				polyurethane	0,003
	GD-050-VI				Viton	0,004
	GD-065-PTFE	78x63x2.5	2.1/2" BSP	65	PTFE	0,007
	GD-065-PU				polyurethane	0,005
	GD-065-VI				Viton	0,006
	GD-080-EP	88x77x3	3" BSP	80	EPDM	0,006
	GD-080-PTFE				PTFE	0,006
	GD-080-PU				polyurethane	0,006
	GD-080-VI				Viton	0,008
	GD-100-EP	114x100x3	4" BSP	100	EPDM	0,009
	GD-100-PTFE				PTFE	0,009
	GD-100-PU				polyurethane	0,009
	GD-100-VI				Viton	0,014

\* - Novapress® MULTI II is a seal made of aramid fibres and carbon fibres, fillers and NBR rubber, mainly intended for steam and hot water.



# INDUSTRIAL FITTINGS - couplings

## Threaded couplings for liquid gas (LPG)

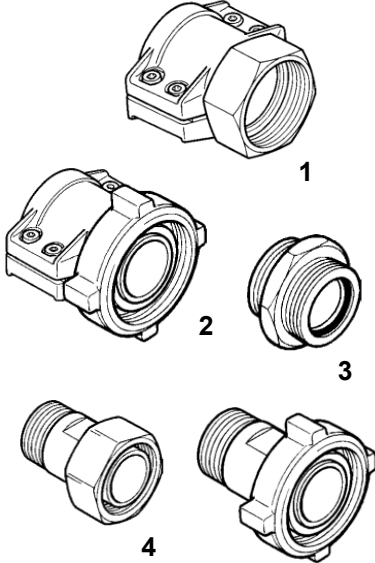
**Coupling material:** St (carbon steel), Ms (brass)

**Seal:** NBR (only for position 3)

**Working pressure:** 25 bar

A complete hose coupling with an aluminium safety clamp and male or female thread. Adapters with male thread at both ends or with male thread and female thread with a swivel nut.

DN - hose inside diameter x hose wall thickness.

picture	code	DN / thread	thread	material	weight [kg]	pic.
	GD-MSLA-175-013-STM-CL-05	13 x 5	1.3/4" ACME	St/Ms	0.36	1
	GD-MSLA-175-019-STM-CL-06	19 x 6	1.3/4" ACME	St/Ms	0.41	1
	GD-MSLA-175-025-STM-CL-06	25 x 6	1.3/4" ACME	St/Ms	0.42	1
	GD-MSLA-175-032-STM-CL-06	32 x 6	1.3/4" ACME	St/Ms	0.46	1
	GD-MSLA-225-032-STM-CL-06		2.1/4" ACME	St/Ms	0.73	2
	GD-MSLA-225-038-STM-CL-65	38 x 6.5	2.1/4" ACME	St/Ms	0.78	2
	GD-MSLA-325-050-STM-CL-08	50 x 8	3.1/4" ACME	St/Ms	1.65	2
	GD-MSLA-325-075-STM-CL-08	75 x 8	3.1/4" ACME	St/Ms	2.85	2
	GD-ADN-AA-175-175-ST	1.3/4" ACME	1.3/4" ACME	St	0.20	3
	GD-ADN-AA-225-225-ST	2.1/4" ACME	2.1/4" ACME	St	0.51	3
	GD-ADN-AA-325-325-ST	3.1/4" ACME	3.1/4" ACME	St	1.40	3
	GD-ARV-ANT-175-025-STM	1.3/4" ACME	1" NPT	St/Ms	0.37	4
	GD-ARV-ANT-225-032-STM	2.1/4" ACME	1.1/4" NPT	St/Ms	0.78	5
	GD-ARV-ANT-325-050-STM	3.1/4" ACME	2" NPT	St/Ms	1.60	5

# INDUSTRIAL FITTINGS - couplings

## Threaded couplings for cryogenic gases - EIGA



**Material:** SS (AISI 303 / AISI 304)  
Ms - brass

**Seal:** PTFE

**Connections:** Female thread, welding neck, flanged connection

**Working temp.:** Down to -196°C

### Operation

EIGA coupling halves are secured together when a coupler (hose unit) connects with an adapter (tank unit). Female thread Tr 90x8 (coupler) is then connected with male thread Tr 89x8 (adapter). The coupler consists of a swivel nut set on a pipe stub with the use of a ball bearing. The pipe stub can either have 2.1/2" female thread or 76.1 x 8 mm welding neck at its end.

### Application

Loading and unloading of cryogenic liquefied gases such as CO<sub>2</sub>, N<sub>2</sub>, Ar, O<sub>2</sub> and a few other. The couplings are specific for each type of gas - they are coded using slots of special dimension on the coupler which mate only with pins on the corresponding adapter. This code systems prevents connecting the coupler of one gas e.g. oxygen with the adapter of the other e.g. nitrogen.

### Standard

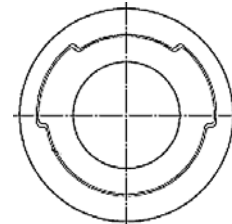
EIGA - EUROPEAN INDUSTRIAL GASES ASSOCIATION. EIGA couplings are manufactured according to EIGA 909/03/E standard (EIGA CRYOGENIC GASES COUPLINGS FOR TANKER FILLING) and meet the requirements of EN 13371.



adapter - tank unit



coupler - hose unit










nut code example (N<sub>2</sub>)

picture	code	connection	working press. [bar]	medium	material	seal
A 3D rendering of a metal adapter with a flange base and a threaded top.	EV-830104070064	flange DN65 PN40	40	CO <sub>2</sub>	Ms	PTFE
	EV-830104070061			N <sub>2</sub>		
	EV-830104070062			Ar		
	EV-830104070063			O <sub>2</sub>	SS	
	EV-830004070064			CO <sub>2</sub>		
	EV-830004070061			N <sub>2</sub>		
	EV-830004070062			Ar		
	EV-830004070063			O <sub>2</sub>		
	A 3D rendering of a metal adapter with a threaded top and a flange base.			EV-110102000003		
EV-110102000000		N <sub>2</sub>				
EV-110102000001		Ar				
EV-110102000002		O <sub>2</sub>				
Adapter seal	EV-120000060016	-	40	CO <sub>2</sub> , N <sub>2</sub> , Ar, O <sub>2</sub>	PTFE	-
Blank cap	EV-110106000000	-	-	-	SS	-
	EV-110206000000				PA 6	
	EV-110006000011				Ms	

# INDUSTRIAL FITTINGS - couplings

## Threaded couplings for cryogenic gases - EIGA

picture	code	connection	work. press. [bar]	medium	material	seal			
<div>Complete coupler</div> 	EV-830103052065	2.1/2" BSP female thread	40	CO <sub>2</sub>	Ms				
	EV-830103049065			N <sub>2</sub>					
	EV-830103050065			Ar					
	EV-830103051065			O <sub>2</sub>					
	EV-830003052065	2.1/2" BSP female thread	40	CO <sub>2</sub>	SS				
	EV-830003049065			N <sub>2</sub>					
	EV-830003050065			Ar					
	EV-830003051065			O <sub>2</sub>					
<div>Complete coupler</div> 	EV-830003052089	welding end 76.1x8 mm	40	CO <sub>2</sub>	SS				
	EV-830003049089			N <sub>2</sub>					
	EV-830003050089			Ar					
	EV-830003051089			O <sub>2</sub>					
<div>Coupler nut</div> 	EV-120000000003	-	40	CO <sub>2</sub>	Ms				
	EV-120000000000			N <sub>2</sub>					
	EV-120000000001			Ar					
	EV-120000000002			O <sub>2</sub>					
	EV-110100000003			CO <sub>2</sub>	SS				
	EV-110100000000			N <sub>2</sub>					
	EV-110100000001			Ar					
	EV-110100000002			O <sub>2</sub>					
<div>Coupler stub with thread</div>	EV-120000000012	2.1/2" BSP female thread	40	CO <sub>2</sub> N <sub>2</sub> Ar O <sub>2</sub>	Ms				
	EV-110111000003			SS					
<div>Coupler stub with welding end</div> 	EV-110111000000	welding end 76.1x8 mm	40	CO <sub>2</sub> N <sub>2</sub> Ar O <sub>2</sub>	SS				
<div>Blank plug</div> 	EV-110207000000	-	-	-	PA 6				
	EV-120000000135				Ms				
<div>Balls, blank plug - set</div> 	EV-120000000048	-	-	CO <sub>2</sub> N <sub>2</sub> Ar O <sub>2</sub>	SS				
<div>Spanner</div> 	EV-120000000031	-	-	-	Ms				

# INDUSTRIAL FITTINGS - couplings

## Threaded couplings for cryogenic gases - LPG



**Material:** SS (AISI 304 steel)  
Ms (brass)  
**Seal:** PTFE  
**Connections:** Weld-in neck, (option - flange connection)  
**Working temp.:** Down to -196°C  
**Working press.:** Up to 12 bar

### Operation:

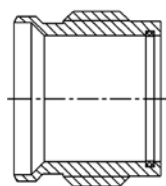
Threaded couplings for application in LNG installations. A coupler (hose unit) connects with an adapter (tank unit) by thread Tr 80x8. The coupler consists of a swivel nut set on a pipe stub. The pipe stub has a welding neck as a standard. The couplings are also available with flange connections.

### Application:

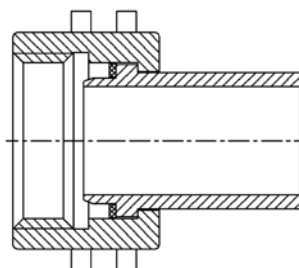
Loading and unloading of LNG (Liquefied Natural Gas) and other liquefied technical gases.

### Standard:

Manufactured according to the producer's standard.



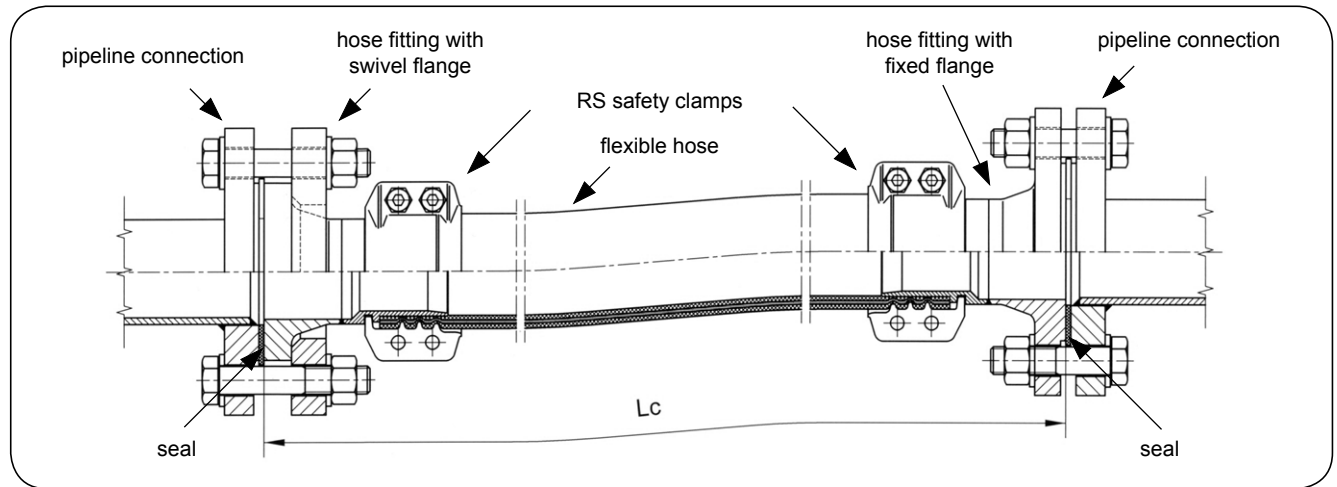
adapter - tank unit



coupler - hose unit

picture	code	description	picture	code	description
	EV-LNG-W-065-SS	Adapter with welding neck 76.1x2.9 mm and seal. Material: AISI 304.		EV-LNG-G-065-SS	Coupler with welding neck 63x6.5 mm and seal. Material: AISI 304.
	EV-LNG-Z-Ms	Adapter cap. Material: brass.		EV-LNG-K-Al	Coupler plug. Material: aluminium.
	EV-LNG-UW	Adapter seal.		EV-LNG-UG	Coupler seal.
				EV-LNG-KL	Wrench for nut.

## Flange couplings



The application of flange couplings in industry is one of the most extensive. First of all, the flange couplings are utilized to connect lengths of industrial pipelines, yet they are also used for flexible hose connection. The most frequently used steel flanges are manufactured according to the requirements of standards which precisely specify their types, dimensions, types of sealing surface, steel types, acceptable values of pressure at specific temperature.

PN flanges meet the requirements of:

- EN 1092-1:2007 - the recent European Standard,
- ISO 7005-1,
- set of old German DIN standards (e.g. DIN2633),
- old Polish standards e.g. PN-87/H-74731.

PN and the number that follows e.g. PN16, indicates mechanical properties and flange dimensions - „nominal pressure”. It is not a direct equivalent of permissible working pressure, because the last depends on the flange material and temperature of the medium. For medium temperature +20°C the permissible working pressure of PN16 flange amounts to 16 bar. The standards define working parameters for other temperatures. PN-marked flanges are manufactured for the following PN values:

PN2.5	PN6	PN10	PN16	PN25	PN40	PN63	PN100	PN160	PN250	PN320	PN400
-------	-----	------	------	------	------	------	-------	-------	-------	-------	-------

PN10, PN16 (most often), PN25 and PN40 flanges are most frequently used to connect with flexible hose assemblies. Flange dimensions according to different PN are sometimes the same, e.g.:

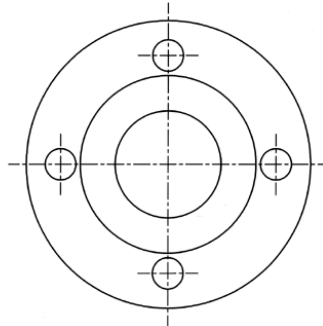
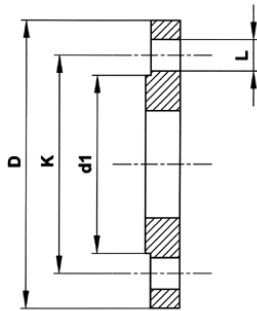
DN	PN6	PN10	PN16	PN25	PN40
from 10 to 40	PN6	use dimensions PN40	use dimensions PN40	use dimensions PN40	PN40
from 50 to 150	PN6	use dimensions PN16	PN16	use dimensions PN40	PN40
above 150	PN6	PN10	PN16	PN25	PN40

ASA 150 and ASA 300 flanges (according to American ANSI B16.5 standard). The numbers 150 and 300 indicate the class of mechanical properties and dimensions. The class 150 corresponds to PN20, and 300 corresponds to PN50.

The basic mating dimensions (flange diameters and hole parameters: number, diameters and position of bolt holes) for PN and ASA flanges are given in the table “Mating dimensions for PN and ASA flanges”. Other dimensions, e.g. thickness should be defined according to the standard.

# INDUSTRIAL FITTINGS - couplings

## Mating dimensions of PN and ASA flanges



**D** - outside flange diameter

**K** - diameter of bolt circle

**d1** - face diameter

**L** - diameter of bolt hole

PN flange dimensions given by EN 1092-1. ASA flange dimensions given by ASME/ANSI B16.5:1996.

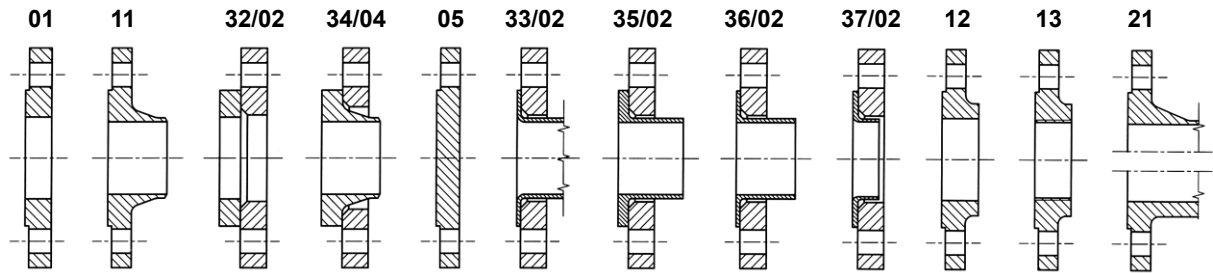
nominal diameters		PN6						PN10/16					
[mm]	[inch]	D	K	d1	L	bolts no.	thread	D	K	d1	L	bolts no.	thread
15	1/2	80	55	40	11	4	M10	95	65	45	14	4	M12
20	3/4	90	65	50	11	4	M10	105	75	58	14	4	M12
25	1	100	75	60	11	4	M10	115	85	68	14	4	M12
32	1.1/4	120	90	70	14	4	M12	140	100	78	18	4	M16
40	1.1/2	130	100	80	14	4	M12	150	110	88	18	4	M16
50	2	140	110	90	14	4	M12	165	125	102	18	4	M16
65	2.1/2	160	130	110	14	4	M12	185	145	122	18	8	M16
80	3	190	150	128	18	4	M16	200	160	138	18	8	M16
100	4	210	170	148	18	4	M16	220	180	158	18	8	M16
125	5	240	200	178	18	8	M16	250	210	188	18	8	M16
150	6	265	225	202	18	8	M16	285	240	212	22	8	M20
200	8	320	280	258	18	8	M16	340	295	268	22	8/12	M20
250	10	375	335	312	18	12	M16	395/405	350/355	320	22/26	12	M20/M24

nominal diameters		PN25						PN40					
[mm]	[inch]	D	K	d1	L	bolts no.	thread	D	K	d1	L	bolts no.	thread
15	1/2	95	65	45	14	4	M12	95	65	45	14	4	M12
20	3/4	105	75	58	14	4	M12	105	75	58	14	4	M12
25	1	115	85	68	14	4	M12	115	85	68	14	4	M12
32	1.1/4	140	100	78	18	4	M16	140	100	78	18	4	M16
40	1.1/2	150	110	88	18	4	M16	150	110	88	18	4	M16
50	2	165	125	102	18	4	M16	165	125	102	18	4	M16
65	2.1/2	185	145	122	18	8	M16	185	145	122	18	8	M16
80	3	200	160	138	18	8	M16	200	160	138	18	8	M16
100	4	235	190	162	22	8	M20	235	190	162	22	8	M20
125	5	270	220	188	26	8	M24	270	220	188	26	8	M24
150	6	300	250	218	26	8	M24	300	250	218	26	8	M24
200	8	360	310	278	26	12	M24	375	320	285	30	12	M27
250	10	425	370	335	30	12	M27	450	385	345	33	12	M30

nominal diameters		ASA 150						ASA 300					
[mm]	[inch]	D	K	d1	L	bolts no.	thread	D	K	d1	L	bolts no.	thread
15	1/2	88.9	60.3	34.9	15.9	4	1/2	95.3	66.7	34.9	15.9	4	1/2
20	3/4	98.4	69.9	42.9	15.9	4	1/2	117.5	82.5	42.9	19	4	5/8
25	1	108.0	79.4	50.8	15.9	4	1/2	123.8	88.9	50.8	19	4	5/8
32	1.1/4	117.5	88.9	63.5	15.9	4	1/2	133.4	98.4	63.5	19	4	5/8
40	1.1/2	127.0	98.4	73.0	15.9	4	1/2	155.6	114.3	73.0	22.2	4	3/4
50	2	152.4	120.7	92.1	19	4	5/8	165.1	127.0	92.1	19	8	5/8
65	2.1/2	177.8	139.7	104.8	19	4	5/8	190.5	149.2	104.8	22.2	8	3/4
80	3	190.5	152.4	127.0	19	4	5/8	209.6	168.3	127.0	22.2	8	3/4
100	4	228.6	190.5	157.2	19	8	5/8	254.0	200.0	157.2	22.2	8	3/4
125	5	254.0	215.9	185.7	22.2	8	3/4	279.4	235.0	185.7	22.2	8	3/4
150	6	279.4	241.3	215.9	22.2	8	3/4	317.5	269.9	215.9	22.2	12	3/4
200	8	342.9	298.5	269.9	22.2	8	3/4	381.0	330.2	269.9	25.4	12	7/8
250	10	406.4	362.0	323.9	25.4	12	7/8	444.5	387.3	323.9	28.6	16	1

# INDUSTRIAL FITTINGS - couplings

## PN flange types (according to EN 1092-1)

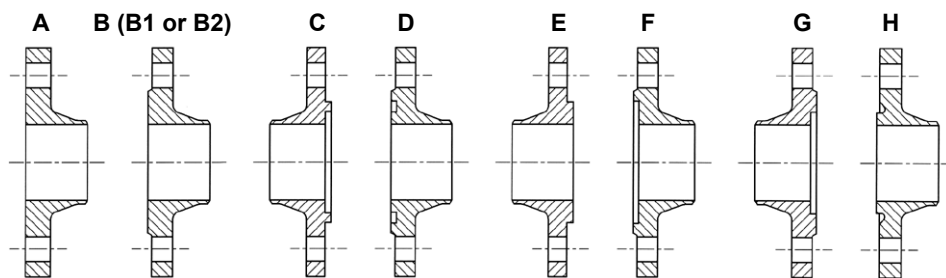


01	plate flange for welding	33	lapped end pipe
11	weld-neck flange	35	weld collar with long neck
02	loose plate flange (swivel)	36	pressed collar with long neck
04	loose plate flange (swivel)	37	pressed collar
05	blank flange	12	hubbed slip-on flange for welding
32	weld-on plate collar	13	hubbed threaded flange
34	weld-neck collar	21	integral flange

### Sealing surface:

Flanges can have different sealing surface of their faces depending on the sealing applied.

### Sealing surface of PN flanges (according to EN 1092-1):



A	flat	E	spigot
B	raised face	F	recess
C	tongue	G	O-ring spigot
D	groove	H	O-ring groove

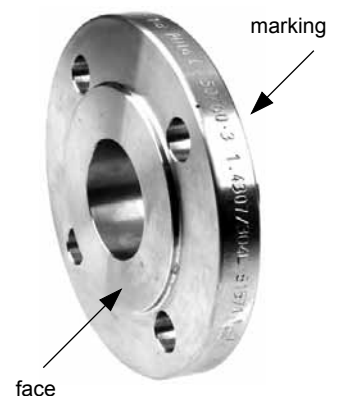
Type B1 with raised face is the most frequently used. The seal face should be grooved - a result of turning - to ensure surface roughness compliant with the standard.

### Flange marking:

All flanges should be clearly and permanently marked. Marking should include: flange manufacturer's name or trade mark, number of the standard, flange type number, DN, PN number, material, heat number. The marking should be stamped on the flange outer rim.




Marking example:

**XXX/EN1092-1/11/DN150/PN40/S235JR/12345**



## INDUSTRIAL FITTINGS - couplings

### Flange hose fittings - assembly

	<p>Assemble with RS-636... and RS-637... safety clamps described in "INDUSTRIAL FITTINGS - clip, clamps, ferrules" chapter. TK-RKSS and TK - RKOPS flange fittings are sold without clamps, which should be separately selected. FSL flange couplings are supplied with safety clamps as a set.</p>
	<p>TK-RKSS and TK-RKOPS flange fittings can be crimped with TI-LR... and TI-LDR... ferrules described in "INDUSTRIAL FITTINGS - clip, clamps, ferrules" chapter.</p>
	<p>TK-CKSS and TK-CKOPS flange fittings and FRS flange couplings should be assembled with adequate worm-drive clamps or band-it system described in "INDUSTRIAL FITTINGS - clip, clamps, ferrules".</p>

**Rubber steam hoses should only be used with special flanges and clamps, described in „Steam hoses” section.**

Flange fittings for steel, composite and PTFE hoses are described in respective sections.



# INDUSTRIAL FITTINGS - couplings

## EN1092-1 PN16 flanges

Material: carbon steel, AISI 304 steel (add SS to the code), AISI 316 steel (add SS316 to the code).

DN	code					
	01B type	32B type	02 type	11B type	34B type	04 type
15	TK-KSP-015	TK-KOPP-015	TK-KO-T02-015	TK-KSS-015	TK-KOPS-015	TK-KO-015
20	TK-KSP-020	TK-KOPP-020	TK-KO-T02-020	TK-KSS-020	TK-KOPS-020	TK-KO-020
25	TK-KSP-025	TK-KOPP-025	TK-KO-T02-025	TK-KSS-025	TK-KOPS-025	TK-KO-025
32	TK-KSP-032	TK-KOPP-032	TK-KO-T02-032	TK-KSS-032	TK-KOPS-032	TK-KO-032
40	TK-KSP-040	TK-KOPP-040	TK-KO-T02-040	TK-KSS-040	TK-KOPS-040	TK-KO-040
50	TK-KSP-050	TK-KOPP-050	TK-KO-T02-050	TK-KSS-050	TK-KOPS-050	TK-KO-050
65	TK-KSP-065	TK-KOPP-065	TK-KO-T02-065	TK-KSS-065	TK-KOPS-065	TK-KO-065
80	TK-KSP-080	TK-KOPP-080	TK-KO-T02-080	TK-KSS-080	TK-KOPS-080	TK-KO-080
100	TK-KSP-100	TK-KOPP-100	TK-KO-T02-100	TK-KSS-100	TK-KOPS-100	TK-KO-100
125	TK-KSP-125	TK-KOPP-125	TK-KO-T02-125	TK-KSS-125	TK-KOPS-125	TK-KO-125
150	TK-KSP-150	TK-KOPP-150	TK-KO-T02-150	TK-KSS-150	TK-KOPS-150	TK-KO-150

## Weld-in pipe stubs for flanges

DN	code	hose I.D. [mm]	d [mm]	type	DN	code	hose I.D. [mm]	d [mm]
25	TK-WC-025	25	33.7	A	15	TK-WRS-015-013	13	21.3
32	TK-WC-032	32	42.4	A	20	TK-WRS-020-019	19	26.9
40	TK-WC-040	38-40	48.3	A	25	TK-WRS-025-025	25	33.7
50	TK-WC-050	50-51	60.3	A	32	TK-WRS-032-032	32	42.4
65	TK-WC-065	63-65	76.1	A	40	TK-WRS-040-038	38	48.3
80	TK-WC-080-076	75-76	88.9	A	40	TK-WRS-040-040	40	48.3
80	TK-WC-080-080	80	88.9	A	50	TK-WRS-050-050	50	60.3
100	TK-WC-100	100-102	114.3	B	50	TK-WRS-050-051	51	60.3
125	TK-WC-125	125-127	139.7	B	65	TK-WRS-065-063	63	76.1
150	TK-WC-150	150-152	168.3	B	65	TK-WRS-065-065	65	76.1
200	TK-WC-200	200-203	219.1	C	80	TK-WRS-080-076	76	88.9
250	TK-WC-250	250-254	273.0	C	80	TK-WRS-080-080	80	88.9
					100	TK-WRS-100-100	100	114.3
					100	TK-WRS-100-102	102	114.3
					125	TK-WRS-125-125	125	139.7
					125	TK-WRS-125-127	127	139.7
					150	TK-WRS-150-150	150	168.3
					150	TK-WRS-150-152	152	168.3
					200	TK-WRS-200-200	200	219.1
					200	TK-WRS-200-203	203	219.1

Material: carbon steel, AISI 304 steel (add SS to the code), AISI 316 steel (add SS316 to the code).

Working pressure 10 bar (type TK-WC), 25 bar (type TK-WRS).

- assemble with clamps (type TK-WC),
- assemble with RS safety clamps or crimp with TI-LR, TI-LDR ferrules (type TK-WRS).

# INDUSTRIAL FITTINGS - couplings

## Flange fittings for rubber and plastic hoses

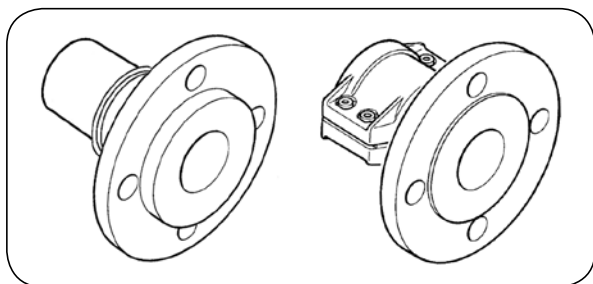
Material: carbon steel, AISI 304 steel (add SS to the code), AISI 316 steel (add SS316 to the code). Flanges according to EN1092-1 PN16 - assemble with clamps. Working pressure 10 bar.

	DN	fitting with fixed neck flange	fitting with swivel flange, neck face		hose I.D. [mm]	type
			stub	flange		
A TK-CKSS	25	TK-CKSS-025	TK-CKOPS-025	TK-KO-025	25	A
	32	TK-CKSS-032	TK-CKOPS-032	TK-KO-032	32	A
	40	TK-CKSS-040	TK-CKOPS-040	TK-KO-040	38-40	A
B TK-CKOPS	50	TK-CKSS-050	TK-CKOPS-050	TK-KO-050	50-51	A
	65	TK-CKSS-065	TK-CKOPS-065	TK-KO-065	63-65	A
	80	TK-CKSS-080-076	TK-CKOPS-080-076	TK-KO-080	75-76	A
	80	TK-CKSS-080-080	TK-CKOPS-080-080	TK-KO-080	80	A
C TK-KO	100	TK-CKSS-100	TK-CKOPS-100	TK-KO-100	100-102	B
	125	TK-CKSS-125	TK-CKOPS-125	TK-KO-125	125-127	B
	150	TK-CKSS-150	TK-CKOPS-150	TK-KO-150	150-152	B
	200	TK-CKSS-200	TK-CKOPS-200	TK-KO-200	200-203	C
	250	TK-CKSS-250	TK-CKOPS-250	TK-KO-250	250-254	C

Material: carbon steel, AISI 304 steel (add SS to the code), AISI 316 steel (add SS316 to the code). Flanges according to EN1092-1 PN16, fittings according to EN14420-4. - assemble with RS safety clamps or crimp with TI-LR, TI-LDR ferrules. Working pressure up to 25 bar.

	DN	fitting with fixed neck flange	fitting with swivel flange, neck face		hose I.D. [mm]
			stub	flange	
TK-RKSS	15	TK-RKSS-015-013	TK-RKOPS-015-013	TK-KO-015	13
	20	TK-RKSS-020-019	TK-RKOPS-020-019	TK-KO-020	19
	25	TK-RKSS-025-025	TK-RKOPS-025-025	TK-KO-025	25
	32	TK-RKSS-032-032	TK-RKOPS-032-032	TK-KO-032	32
	40	TK-RKSS-040-038	TK-RKOPS-040-038	TK-KO-040	38
	40	TK-RKSS-040-040	TK-RKOPS-040-040	TK-KO-040	40
	50	TK-RKSS-050-050	TK-RKOPS-050-050	TK-KO-050	50
	50	TK-RKSS-050-051	TK-RKOPS-050-051	TK-KO-050	51
	65	TK-RKSS-065-063	TK-RKOPS-065-063	TK-KO-065	63
	65	TK-RKSS-065-065	TK-RKOPS-065-065	TK-KO-065	65
TK-RKOPS	80	TK-RKSS-080-076	TK-RKOPS-080-076	TK-KO-080	76
	80	TK-RKSS-080-080	TK-RKOPS-080-080	TK-KO-080	80
	100	TK-RKSS-100-100	TK-RKOPS-100-100	TK-KO-100	100
	100	TK-RKSS-100-102	TK-RKOPS-100-102	TK-KO-100	102
	125	TK-RKSS-125-125	TK-RKOPS-125-125	TK-KO-125	125
	125	TK-RKSS-125-127	TK-RKOPS-125-127	TK-KO-125	127
	150	TK-RKSS-150-150	TK-RKOPS-150-150	TK-KO-150	150
	150	TK-RKSS-150-152	TK-RKOPS-150-152	TK-KO-150	152
	200	TK-RKSS-200-200	TK-RKOPS-200-200	TK-KO-200	200
	200	TK-RKSS-200-203	TK-RKOPS-200-203	TK-KO-200	203

# INDUSTRIAL FITTINGS - couplings



## FSL flanges

**Material:** St (zinc-plated steel)  
SS (AISI 316)  
Pp (polypropylene)  
Al (aluminium)

**Working press.:** 25 bar (16 bar for aluminium)  
10 bar for polypropylene)

Flanges designed for rubber industrial hoses, with a smooth hose tail, with a lock - to be mounted with safety clamps (EN14423-3, DIN2817). Can be also crimped with ferrules e.g. TI - LR-... Available as a set with a standard size aluminium safety clamp or without clamp.

hose I.D.		clamp size [mm]	hose O.D. range [mm]	flange		material	fitting code	
[inch]	[mm]			size	type		with swivel flange	with fixed flange
1/2	13	safety clamp not included		DN15	PN40	St	TK-FSL2-015-013-ST	TK-FSL1-015-013-ST
						SS / St	TK-FSL2-015-013-SST	-
						SS	TK-FSL2-015-013-SS	TK-FSL1-015-013-SS
						St	TK-FSL2-015-013-ST-CL-05	TK-FSL1-015-013-ST-CL-05
		13 x 5	22 ÷ 24	1/2"	ASA 150	SS / St	TK-FSL2-015-013-SST-CL-05	-
						SS	TK-FSL2-015-013-SS-CL-05	TK-FSL1-015-013-SS-CL-05
						St	TK-FSA2-015-013-ST-CL-05	TK-FSA1-015-013-ST-CL-05
						SS / St	TK-FSA2-015-013-SST-CL-05	-
3/4	19	safety clamp not included		DN20	PN40	St	TK-FSL2-020-019-ST	TK-FSL1-020-019-ST
						SS / St	TK-FSL2-020-019-SST	-
						SS	TK-FSL2-020-019-SS	TK-FSL1-020-019-SS
						St	TK-FSL2-020-019-ST-CL-06	TK-FSL1-020-019-ST-CL-06
		19 x 6	30 ÷ 33	3/4"	ASA 150	SS / St	TK-FSL2-020-019-SST-CL-06	-
						SS	TK-FSL2-020-019-SS-CL-06	TK-FSL1-020-019-SS-CL-06
						St	TK-FSA2-020-019-ST-CL-06	TK-FSA1-020-019-ST-CL-06
						SS / St	TK-FSA2-020-019-SST-CL-06	-
1	25	safety clamp not included		DN25	PN40	ST	TK-FSA4-020-019-ST-CL-06	TK-FSA3-020-019-ST-CL-06
						St	TK-FSL2-025-025-ST	TK-FSL1-025-025-ST
						SS / St	TK-FSL2-025-025-SST	-
						SS	TK-FSL2-025-025-SS	TK-FSL1-025-025-SS
				1"	ASA 150	Pp	TK-FSL2-025-025-PP	-
						Pp / St	TK-FSL2-025-025-PPS	-
						St	TK-FSA2-025-025-ST	TK-FSA1-025-025-ST
						SS / St	TK-FSA2-025-025-SST	-
		25 x 6	36 ÷ 39	DN25	PN40	SS	TK-FSA2-025-025-SS	TK-FSA1-025-025-SS
						St	TK-FSA4-025-025-ST	TK-FSA3-025-025-ST
						St	TK-FSL2-025-025-ST-CL-06	TK-FSL1-025-025-ST-CL-06
						SS / St	TK-FSL2-025-025-SST-CL-06	-
				1"	ASA 150	SS	TK-FSL2-025-025-SS-CL-06	TK-FSL1-025-025-SS-CL-06
						Pp	TK-FSL2-025-025-PP-CL-06	-
						Pp / St	TK-FSL2-025-025-PPS-CL-06	-
						St	TK-FSA2-025-025-ST-CL-06	TK-FSA1-025-025-ST-CL-06
ASA 300	1"	ASA 150	SS / St	TK-FSA2-025-025-SST-CL-06	-			
			SS	TK-FSA2-025-025-SS-CL-06	TK-FSA1-025-025-SS-CL-06			
ASA 300	1"	ASA 300	St	TK-FSA4-025-025-ST-CL-06	TK-FSA3-025-025-ST-CL-06			

# INDUSTRIAL FITTINGS - couplings

## FSL flanges (table continuation)

hose I.D.		clamp size [mm]	hose O.D. range [mm]	flange		material	fitting code	
[inch]	[mm]			size	type		with swivel flange	with fixed flange
1.1/4	32	safety clamp not included		DN32	PN40	St	TK-FSL2-032-032-ST	TK-FSL1-032-032-ST
						SS / St	TK-FSL2-032-032-SST	-
						SS	TK-FSL2-032-032-SS	TK-FSL1-032-032-SS
						Pp	TK-FSL2-032-032-PP	-
						Pp / St	TK-FSL2-032-032-PPS	-
						St	TK-FSL2-032-032-ST-CL-06	TK-FSL1-032-032-ST-CL-06
						SS / St	TK-FSL2-032-032-SST-CL-06	-
						SS	TK-FSL2-032-032-SS-CL-06	TK-FSL1-032-032-SS-CL-06
		32 x 6	43 ÷ 46	1.1/4"	ASA 150	Pp	TK-FSL2-032-032-PP-CL-06	-
						Pp / St	TK-FSL2-032-032-PPS-CL-06	-
						St	TK-FSA2-032-032-ST-CL-06	TK-FSA1-032-032-ST-CL-06
						SS / St	TK-FSA2-032-032-SST-CL-06	-
1.1/4"	ASA 300	SS	TK-FSA2-032-032-SS-CL-06	TK-FSA1-032-032-SS-CL-06				
		St	TK-FSA4-032-032-ST-CL-06	TK-FSA3-032-032-ST-CL-06				
		St	TK-FSL2-040-038-ST	TK-FSL1-040-038-ST				
1.1/2	38	safety clamp not included		DN40	PN40	SS / St	TK-FSL2-040-038-SST	-
						SS	TK-FSL2-040-038-SS	TK-FSL1-040-038-SS
						Pp	TK-FSL2-040-038-PP	-
						Pp / St	TK-FSL2-040-038-PPS	-
						St	TK-FSL2-040-038-ST-CL-65	TK-FSL1-040-038-ST-CL-65
						SS / St	TK-FSL2-040-038-SST-CL-65	-
						SS	TK-FSL2-040-038-SS-CL-65	TK-FSL1-040-038-SS-CL-65
						Pp	TK-FSL2-040-038-PP-CL-65	-
		38 x 6.5	50 ÷ 52	1.1/2"	ASA 150	Pp / St	TK-FSL2-040-038-PPS-CL-65	-
						St	TK-FSA2-040-038-ST-CL-65	TK-FSA1-040-038-ST-CL-65
						SS / St	TK-FSA2-040-038-SST-CL-65	-
						SS	TK-FSA2-040-038-SS-CL-65	TK-FSA1-040-038-SS-CL-65
1.1/2"	ASA 300	St	TK-FSA4-040-038-ST-CL-65	TK-FSA3-040-038-ST-CL-65				
		St	TK-FSL2-040-040-ST	TK-FSL1-040-040-ST				
		SS / St	TK-FSL2-040-040-SST	-				
1.1/2	40	safety clamp not included		DN40	PN40	SS	TK-FSL2-040-040-SS	TK-FSL1-040-040-SS
						Pp	TK-FSL2-040-040-PP	-
						Pp / St	TK-FSL2-040-040-PPS	-
						St	TK-FSL2-040-040-ST-CL-07	TK-FSL1-040-040-ST-CL-07
						SS / St	TK-FSL2-040-040-SST-CL-07	-
						SS	TK-FSL2-040-040-SS-CL-07	TK-FSL1-040-040-SS-CL-07
						Pp	TK-FSL2-040-040-PP-CL-07	-
						Pp / St	TK-FSL2-040-040-PPS-CL-07	-
		40 x 7	53 ÷ 56	1.1/2"	ASA 150	St	TK-FSA2-040-040-ST-CL-07	TK-FSA1-040-040-ST-CL-07
						SS / St	TK-FSA2-040-040-SST-CL-07	-
						SS	TK-FSA2-040-040-SS-CL-07	TK-FSA1-040-040-SS-CL-07
						St	TK-FSL2-050-050-ST	TK-FSL1-050-050-ST
2	50	safety clamp not included		DN50	PN16	SS / St	TK-FSL2-050-050-SST	-
						SS	TK-FSL2-050-050-SS	TK-FSL1-050-050-SS
						Pp	TK-FSL2-050-050-PP	-
						Pp / St	TK-FSL2-050-050-PPS	-
						St	TK-FSL4-050-050-ST	TK-FSL3-050-050-ST
					PN40	SS / St	TK-FSL4-050-050-SST	-
						SS	TK-FSL4-050-050-SS	TK-FSL3-050-050-SS
						St	TK-FSA2-050-050-ST	TK-FSA1-050-050-ST
				2"	ASA 150	SS / St	TK-FSA2-050-050-SST	-
						SS	TK-FSA2-050-050-SS	TK-FSA1-050-050-SS
						St	TK-FSA4-050-050-ST	TK-FSA3-050-050-ST
					ASA 300	St	TK-FSA4-050-050-ST	TK-FSA3-050-050-ST

# INDUSTRIAL FITTINGS - couplings

## FSL flanges (table continuation)

hose I.D.		clamp size [mm]	hose O.D. range [mm]	flange		material	fitting code		
[inch]	[mm]			size	type		with swivel flange	with fixed flange	
2	50	50 x 8	64 ÷ 67	DN50	PN16	St	TK-FSL2-050-050-ST-CL-08	TK-FSL1-050-050-ST-CL-08	
						SS / St	TK-FSL2-050-050-SST-CL-08	-	
						SS	TK-FSL2-050-050-SS-CL-08	TK-FSL1-050-050-SS-CL-08	
						Pp	TK-FSL2-050-050-PP-CL-08	-	
					Pp / St	TK-FSL2-050-050-PPS-CL-08	-		
					St	TK-FSL4-050-050-ST-CL-08	TK-FSL3-050-050-ST-CL-08		
				PN40	SS / St	TK-FSL4-050-050-SST-CL-08	-		
					SS	TK-FSL4-050-050-SS-CL-08	TK-FSL3-050-050-SS-CL-08		
					2"	ASA 150	St	TK-FSA2-050-050-ST-CL-08	TK-FSA1-050-050-ST-CL-08
							SS / St	TK-FSA2-050-050-SST-CL-08	-
ASA 300	SS	TK-FSA2-050-050-SS-CL-08	TK-FSA1-050-050-SS-CL-08						
	St	TK-FSA4-050-050-ST-CL-08	TK-FSA3-050-050-ST-CL-08						
2.1/2	65	safety clamp not included		DN65	PN16	St	TK-FSL2-065-065-ST	TK-FSL1-065-065-ST	
						SS / St	TK-FSL2-065-065-SST	-	
						SS	TK-FSL2-065-065-SS	TK-FSL1-065-065-SS	
						Pp	TK-FSL2-065-065-PP	-	
						Pp / St	TK-FSL2-065-065-PPS	-	
						St	TK-FSL2-065-065-ST-CL-07	TK-FSL1-065-065-ST-CL-07	
						SS / St	TK-FSL2-065-065-SST-CL-07	-	
						SS	TK-FSL2-065-065-SS-CL-07	TK-FSL1-065-065-SS-CL-07	
						Pp	TK-FSL2-065-065-PP-CL-07	-	
						Pp / St	TK-FSL2-065-065-PPS-CL-07	-	
		Al	TK-FSL2-065-065-AL-CL-07	-					
		Al / St	TK-FSL2-065-065-ALS-CL-07	-					
		PN40	St	TK-FSL4-065-065-ST-CL-07	TK-FSL3-065-065-ST-CL-07				
			SS / St	TK-FSL4-065-065-SST-CL-07	-				
			SS	TK-FSL4-065-065-SS-CL-07	TK-FSL3-065-065-SS-CL-07				
			St	TK-FSA2-065-065-ST-CL-07	TK-FSA1-065-065-ST-CL-07				
		2.1/2"	ASA 150	SS / St	TK-FSA2-065-065-SST-CL-07	-			
				SS	TK-FSA2-065-065-SS-CL-07	TK-FSA1-065-065-SS-CL-07			
			ASA 300	St	TK-FSA4-065-065-ST-CL-07	TK-FSA3-065-065-ST-CL-07			
				safety clamp not included	DN80	PN16	St	TK-FSL2-080-075-ST	TK-FSL1-080-075-ST
SS / St	TK-FSL2-080-075-SST	-							
SS	TK-FSL2-080-075-SS	TK-FSL1-080-075-SS							
Pp	TK-FSL2-080-075-PP	-							
Pp / St	TK-FSL2-080-075-PPS	-							
Al / St	TK-FSL2-080-075-ALS	-							
PN40	St	TK-FSL4-080-075-ST	TK-FSL3-080-075-ST						
3"	ASA 150	St	TK-FSA2-080-075-ST			TK-FSA1-080-075-ST			
		SS / St	TK-FSA2-080-075-SST			-			
	ASA 300	SS	TK-FSA2-080-075-SS			TK-FSA1-080-075-SS			
		St	TK-FSA4-080-075-ST	TK-FSA3-080-075-ST					
3	75	75 x 8	89 ÷ 93	DN80	PN16	St	TK-FSL2-080-075-ST-CL-08	TK-FSL1-080-075-ST-CL-08	
						SS / St	TK-FSL2-080-075-SST-CL-08	-	
						SS	TK-FSL2-080-075-SS-CL-08	TK-FSL1-080-075-SS-CL-08	
						Pp	TK-FSL2-080-075-PP-CL-08	-	
						Pp / St	TK-FSL2-080-075-PPS-CL-08	-	
						Al	TK-FSL2-080-075-AL-CL-08	-	
					Al / St	TK-FSL2-080-075-ALS-CL-08	-		
					PN40	St	TK-FSL4-080-075-ST-CL-08	TK-FSL3-080-075-ST-CL-08	
						SS / St	TK-FSL4-080-075-SST-CL-08	-	
						SS	TK-FSL4-080-075-SS-CL-08	TK-FSL3-080-075-SS-CL-08	
		St	TK-FSA2-080-075-ST-CL-08	TK-FSA1-080-075-ST-CL-08					
		3"	ASA 150	SS / St	TK-FSA2-080-075-SST-CL-08	-			
				SS	TK-FSA2-080-075-SS-CL-08	TK-FSA1-080-075-SS-CL-08			
			ASA 300	St	TK-FSA4-080-075-ST-CL-08	TK-FSA3-080-075-ST-CL-08			
				St	TK-FSL2-080-075-ST-CL-08	TK-FSL1-080-075-ST-CL-08			

# INDUSTRIAL FITTINGS - couplings

## FSL flanges (table continuation)

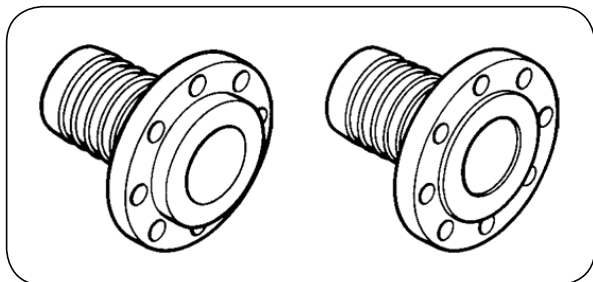
hose I.D.		clamp size [mm]	hose O.D. range [mm]	flange		material	fitting code							
[inch]	[mm]			size	type		with swivel flange	with fixed flange						
-	80	safety clamp not included		DN80	PN16	St	TK-FSL2-080-080-SS	TK-FSL1-080-080-ST						
						SS / St	TK-FSL2-080-080-SST	-						
						SS	TK-FSL2-080-080-SS	TK-FSL1-080-080-SS						
						Pp	TK-FSL2-080-080-PP	-						
						Pp / St	TK-FSL2-080-080-PPS	-						
						St	TK-FSL2-080-080-ST-CL-08	TK-FSL1-080-080-ST-CL-08						
						SS / St	TK-FSL2-080-080-SST-CL-08	-						
						SS	TK-FSL2-080-080-SS-CL-08	TK-FSL1-080-080-SS-CL-08						
		Pp	TK-FSL2-080-080-PP-CL-08	-										
		Pp / St	TK-FSL2-080-080-PPS-CL-08	-										
				PN40	St	TK-FSL4-080-080-ST-CL-08	TK-FSL3-080-080-ST-CL-08							
		80 x 8		94 ÷ 97	3"	ASA 150	St	TK-FSA2-080-080-ST-CL-08	TK-FSA1-080-080-ST-CL-08					
							SS / St	TK-FSA2-080-080-SST-CL-08	-					
							SS	TK-FSA2-080-080-SS-CL-08	TK-FSA1-080-080-SS-CL-08					
							safety clamp not included		DN100	PN16	St	TK-FSL2-100-100-ST	TK-FSL1-100-100-ST	
											SS / St	TK-FSL2-100-100-SST	-	
											SS	TK-FSL2-100-100-SS	TK-FSL1-100-100-SS	
											Pp	TK-FSL2-100-100-PP	-	
											Pp / St	TK-FSL2-100-100-PPS	-	
											Al / St	TK-FSL2-100-100-ALS	-	
									PN40	St	TK-FSL4-100-100-ST	TK-FSL3-100-100-ST		
4"	ASA 150	St	TK-FSA2-100-100-ST	TK-FSA1-100-100-ST										
		SS / St	TK-FSA2-100-100-SST	-										
		SS	TK-FSA2-100-100-SS	TK-FSA1-100-100-SS										
		St	TK-FSA4-100-100-ST	TK-FSA3-100-100-ST										
4	100	100 x 8	114 ÷ 119	DN100	PN16	St	TK-FSL2-100-100-ST-CL-08	TK-FSL1-100-100-ST-CL-08						
						SS / St	TK-FSL2-100-100-SST-CL-08	-						
						SS	TK-FSL2-100-100-SS-CL-08	TK-FSL1-100-100-SS-CL-08						
						Pp	TK-FSL2-100-100-PP-CL-08	-						
						Pp / St	TK-FSL2-100-100-PPS-CL-08	-						
						Al	TK-FSL2-100-100-AL-CL-08	-						
					Al / St	TK-FSL2-100-100-ALS-CL-08	-							
					PN40	St	TK-FSL4-100-100-ST-CL-08	TK-FSL3-100-100-ST-CL-08						
						SS / St	TK-FSL4-100-100-SST-CL-08	-						
						SS	TK-FSL4-100-100-SS-CL-08	TK-FSL3-100-100-SS-CL-08						
						4"	ASA 150	St	TK-FSA2-100-100-ST-CL-08	TK-FSA1-100-100-ST-CL-08				
								SS / St	TK-FSA2-100-100-SST-CL-08	-				
				SS				TK-FSA2-100-100-SS-CL-08	TK-FSA1-100-100-SS-CL-08					
				ASA 300	St		TK-FSA4-100-100-ST-CL-08	TK-FSA3-100-100-ST-CL-08						
					5		125	safety clamp not included		DN125	PN16	St	-	TK-FSL1-125-125-ST
												SS	TK-FSL2-125-125-SS	TK-FSL1-125-125-SS
				St		TK-FSL2-125-125-ST-CL-10						TK-FSL1-125-125-ST-CL-10		
				SS / St		TK-FSL2-125-125-SST-CL-10						-		
SS	TK-FSL2-125-125-SS-CL-10	TK-FSL1-125-125-SS-CL-10												
PN40	St	TK-FSL4-125-125-ST-CL-10	TK-FSL3-125-125-ST-CL-10											
	5"	ASA 150	St	TK-FSA2-125-125-ST-CL-10		TK-FSA1-125-125-ST-CL-10								
			SS / St	TK-FSA2-125-125-SST-CL-10		-								
SS			TK-FSA2-125-125-SS-CL-10	TK-FSA1-125-125-SS-CL-10										
ASA 300		St	TK-FSA4-125-125-ST-CL-10	TK-FSA3-125-125-ST-CL-10										

# INDUSTRIAL FITTINGS - couplings

## FSL flanges (table continuation)

hose I.D.		clamp size [mm]	hose O.D. range [mm]	flange		material	fitting code	
[inch]	[mm]			size	type		with swivel flange	with fixed flange
6	150	safety clamp not included		DN150	PN16	St	-	TK-FSL1-150-150-ST
						SS	-	TK-FSL1-150-150-SS
				6"	ASA 150	St	-	TK-FSA1-150-150-ST
		150 x 10	168 ÷ 174	DN150	PN16	St	TK-FSL2-150-150-ST-CL-10	TK-FSL1-150-150-ST-CL-10
						SS / St	TK-FSL2-150-150-SST-CL-10	-
						SS	TK-FSL2-150-150-SS-CL-10	TK-FSL1-150-150-SS-CL-10
						Al	TK-FSL2-150-150-AL-CL-10	-
						Al / St	TK-FSL2-150-150-ALS-CL-10	-
				PN40	St	TK-FSL4-150-150-ST-CL-10	TK-FSL3-150-150-ST-CL-10	
				6"	ASA 150	St	TK-FSA2-150-150-ST-CL-10	TK-FSA1-150-150-ST-CL-10
						SS / St	TK-FSA2-150-150-SST-CL-10	-
						SS	TK-FSA2-150-150-SS-CL-10	TK-FSA1-150-150-SS-CL-10
						ASA 300	St	TK-FSA4-150-150-ST-CL-10
8	200	safety clamp not included		DN200	PN10	St	-	TK-FSL1-200-200-ST
						St	TK-FSL5-200-200-ST	-
						St	-	TK-FSA1-200-200-ST
		St	TK-FSL2-200-200-ST-CL-12			TK-FSL1-200-200-ST-CL-12		
		SS / St	TK-FSL2-200-200-SST-CL-12			-		
		SS	TK-FSL2-200-200-SS-CL-12			TK-FSL1-200-200-SS-CL-12		
		St	TK-FSL6-200-200-ST-CL-12			TK-FSL5-200-200-ST-CL-12		
		St	TK-FSL8-200-200-ST-CL-12			TK-FSL7-200-200-ST-CL-12		
		8"	ASA 150	St	TK-FSA2-200-200-ST-CL-12	TK-FSA1-200-200-ST-CL-12		
				SS / St	TK-FSA2-200-200-SST-CL-12	-		
				SS	TK-FSA2-200-200-SS-CL-12	TK-FSA1-200-200-SS-CL-12		
			ASA 300	St	TK-FSA4-200-200-ST-CL-12	TK-FSA3-200-200-ST-CL-12		

# INDUSTRIAL FITTINGS - couplings



## FRS flanges

**Material:** St (zinc-plated steel)  
 SS (AISI 316)  
 SS / St ( insert - SS, flange - St)

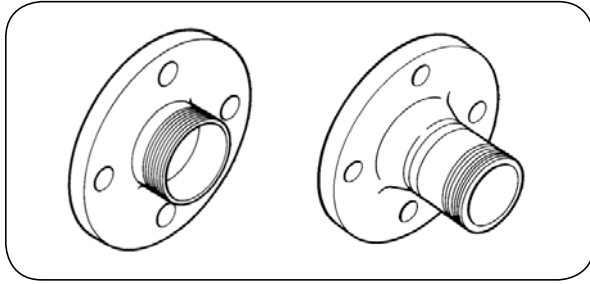
**Working press.:** 10 bar (6 bar for DN125 ÷ 250)

Flanges designed to be mounted with band clamps (see chapter "Clips, clamps, ferrules").

hose I.D.		flange		material	fitting code	
[inch]	[mm]	size	type		with swivel flange	with fixed flange
1	25	DN25	PN40	St	TK-FRS2-025-025-ST	TK-FRS1-025-025-ST
				SS / St	TK-FRS2-025-025-SST	-
				SS	TK-FRS2-025-025-SS	TK-FRS1-025-025-SS
1.1/4	32	DN32	PN40	St	TK-FRS2-032-032-ST	TK-FRS1-032-032-ST
				SS / St	TK-FRS2-032-032-SST	-
				SS	TK-FRS2-032-032-SS	TK-FRS1-032-032-SS
1.1/2	38/40	DN40	PN40	St	TK-FRS2-040-038-ST	TK-FRS1-040-038-ST
				SS / St	TK-FRS2-040-038-SST	-
				SS	TK-FRS2-040-038-SS	TK-FRS1-040-038-SS
2	50	DN50	PN16	St	TK-FRS2-050-050-ST	TK-FRS1-050-050-ST
				SS / St	TK-FRS2-050-050-SST	-
				SS	TK-FRS2-050-050-SS	TK-FRS1-050-050-SS
2.1/2	65	DN65	PN16	St	TK-FRS2-065-065-ST	TK-FRS1-065-065-ST
				SS / St	TK-FRS2-065-065-SST	-
				SS	TK-FRS2-065-065-SS	TK-FRS1-065-065-SS
3	75	DN80	PN16	St	TK-FRS2-080-075-ST	TK-FRS1-080-075-ST
				SS / St	TK-FRS2-080-075-SST	-
				SS	TK-FRS2-080-075-SS	TK-FRS1-080-075-SS
-	80	DN80	PN16	St	TK-FRS2-080-080-ST	TK-FRS1-080-080-ST
				SS / St	TK-FRS2-080-080-SST	-
				SS	TK-FRS2-080-080-SS	TK-FRS1-080-080-SS
4	100	DN100	PN16	St	TK-FRS2-100-100-ST	TK-FRS1-100-100-ST
				SS / St	TK-FRS2-100-100-SST	-
				SS	TK-FRS2-100-100-SS	TK-FRS1-100-100-SS
5	125	DN125	PN16	St	TK-FRS2-125-125-ST	TK-FRS1-125-125-ST
				SS	TK-FRS2-125-125-SS	-
6	150	DN150	PN16	St	TK-FRS2-150-150-ST	TK-FRS1-150-150-ST
				SS / St	TK-FRS2-150-150-SST	-
				SS	TK-FRS2-150-150-SS	TK-FRS1-150-150-SS
8	200	DN200	PN10	St	TK-FRS2-200-200-ST	-
10	250	DN250	PN10	St	TK-FRS2-250-250-ST	-



# INDUSTRIAL FITTINGS - couplings



## FGN flanges

**Material:** Zinc-plated steel  
AISI 316  
Brass  
Polypropylene  
Aluminium

**Working press.:** 10 bar

Male thread fixed flanges.

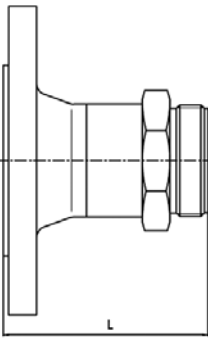
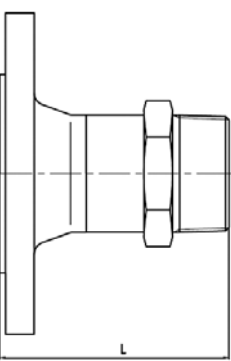
flange		thread	material	code
size	type			
DN25	PN40	1" BSP	zinc-plated steel	TK-FGN-1B-025-100-ST
DN25	PN40	1" BSP	AISI 316	TK-FGN-1B-025-100-SS
DN25	PN10	1" BSPT	polypropylene	TK-FGN-1BT-025-100-PP
DN32	PN40	1.1/4" BSP	zinc-plated steel	TK-FGN-1B-032-125-ST
DN32	PN40	1.1/4" BSP	AISI 316	TK-FGN-1B-032-125-SS
DN40	PN40	1.1/2" BSP	zinc-plated steel	TK-FGN-1B-040-150-ST
DN40	PN40	1.1/2" BSP	AISI 316	TK-FGN-1B-040-150-SS
DN40	PN10	1.1/2" BSP	polypropylene	TK-FGN-1BT-040-150-PP
DN40	PN40	2" BSP	zinc-plated steel	TK-FGN-1B-040-200-ST*
DN40	PN40	2" BSP	AISI 316	TK-FGN-1B-040-200-SS*
1"	TW	3" BSP	zinc-plated steel	TK-FGN-TB-TW1-300-ST
1"	TW	3" BSP	AISI 316	TK-FGN-TB-TW1-300-SS
1"	TW	3" BSP	aluminium	TK-FGN-TB-TW1-300-AL
DN50	PN16	2" BSP	zinc-plated steel	TK-FGN-1B-050-200-ST
DN50	PN16	2" BSP	AISI 316	TK-FGN-1B-050-200-SS
DN50	PN16	2" BSP	AISI 316 / E-CTFE	TK-FGN-1B-050-200-SSE
DN50	PN16	2" BSP	aluminium	TK-FGN-1B-050-200-AL
DN50	PN10	2" BSPT	polypropylene	TK-FGN-1BT-050-200-PP
DN50	PN40	2" BSP	AISI 316	TK-FGN-2B-050-200-SS
2"	ASA 300	2" BSP	AISI 316	TK-FGN-A2B-050-200-SS
DN65	PN16	2.1/2" BSP	zinc-plated steel	TK-FGN-1B-065-250-ST
DN65	PN16	2.1/2" BSP	AISI 316	TK-FGN-1B-065-250-SS
DN65	PN16	3" BSP	zinc-plated steel	TK-FGN-1B-065-300-ST*
DN65	PN16	3" BSP	AISI 316	TK-FGN-1B-065-300-SS*
DN80	PN16	3" BSP	zinc-plated steel	TK-FGN-1B-080-300-ST
DN80	PN16	3" BSP	AISI 316	TK-FGN-1B-080-300-SS
DN80	PN16	3" BSP	AISI 316 / E-CTFE	TK-FGN-1B-080-300-SSE
DN80	PN16	3" BSP	aluminium	TK-FGN-1B-080-300-AL
DN80	PN10	3" BSP	polypropylene	TK-FGN-1BT-080-300-PP
3"	TW	4" BSP	zinc-plated steel	TK-FGN-TB-TW3-400-ST
3"	TW	4" BSP	AISI 316	TK-FGN-TB-TW3-400-SS
3"	TW	4" BSP	aluminium	TK-FGN-TB-TW3-400-AL
3"	ASA 150	3" BSP	AISI 316	TK-FGN-A1B-080-300-SS
4"	ASA 150	3" BSP	AISI 316	TK-FGN-A1B-100-300-SS*
DN100	PN16	4" BSP	zinc-plated steel	TK-FGN-1B-100-400-ST
DN100	PN16	4" BSP	AISI 316	TK-FGN-1B-100-400-SS
DN100	PN16	4" BSP	aluminium	TK-FGN-1B-100-400-AL
DN100	PN16	5.1/2" DIN 11	zinc-plated steel	TK-FGN-1D-100-DIN-ST
DN100	PN16	5.1/2" DIN 11	AISI 316	TK-FGN-1D-100-DIN-SS
DN100	PN16	5.1/2" DIN 11	aluminium	TK-FGN-1D-100-DIN-AL

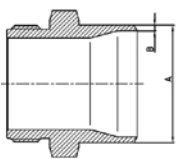
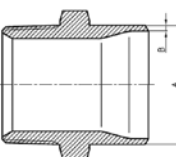
# INDUSTRIAL FITTINGS - couplings

## FGN flanges

**Material:** Carbon steel, AISI 316 steel (add SS-316 to a code)

Coupling with flanges according to EN1092-1 PN16. Optionally available with swivel flanges and flanges according to ANSI B16.5. Joined by a butt weld with a joint quality level „B” according to EN ISO 5817.

picture	size [inch]	FGN flange code	codes of elements		thread size [inch]	length L [mm]
			fitting	PN16 flange		
Flange with BSP thread 	1	TK-KGZ-025-100	TK-WGZ-025-100	TK-KSS-025	1	94
	1.1/4	TK-KGZ-032-125	TK-WGZ-032-125	TK-KSS-032	1.1/4	96
	1.1/2	TK-KGZ-040-150	TK-WGZ-040-150	TK-KSS-040	1.1/2	102
	2	TK-KGZ-050-200	TK-WGZ-050-200	TK-KSS-050	2	114
	2.1/2	TK-KGZ-065-250	TK-WGZ-065-250	TK-KSS-065	2.1/2	116
	3	TK-KGZ-080-300	TK-WGZ-080-300	TK-KSS-080	3	121
	4	TK-KGZ-100-400	TK-WGZ-100-400	TK-KSS-100	4	113
Flange with BSPT thread 	1	TK-KGZT-025-100	TK-WGZT-025-100	TK-KSS-025	1	98
	1.1/4	TK-KGZT-032-125	TK-WGZT-032-125	TK-KSS-032	1.1/4	107
	1.1/2	TK-KGZT-040-150	TK-WGZT-040-150	TK-KSS-040	1.1/2	110
	2	TK-KGZT-050-200	TK-WGZT-050-200	TK-KSS-050	2	119
	2.1/2	TK-KGZT-065-250	TK-WGZT-065-250	TK-KSS-065	2.1/2	125
	3	TK-KGZT-080-300	TK-WGZT-080-300	TK-KSS-080	3	133
	4	TK-KGZT-100-400	TK-WGZT-100-400	TK-KSS-100	4	141

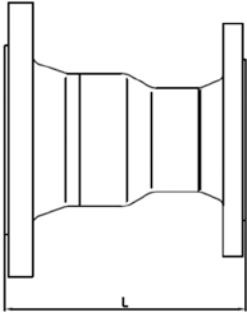
picture	size [inch]	code	thread size [inch]	A diameter [mm]	wall thickness B [mm]
Fitting with BSP thread 	1	TK-WGZ-025-100	1	33.7	2.6
	1.1/4	TK-WGZ-032-125	1.1/4	42.4	2.6
	1.1/2	TK-WGZ-040-150	1.1/2	48.3	2.6
	2	TK-WGZ-050-200	2	60.3	2.9
	2.1/2	TK-WGZ-065-250	2.1/2	76.1	2.9
	3	TK-WGZ-080-300	3	88.9	3.2
	4	TK-WGZ-100-400	4	114.3	3.6
Fitting with BSPT thread 	1	TK-WGZT-025-100	1	33.7	2.6
	1.1/4	TK-WGZT-032-125	1.1/4	42.4	2.6
	1.1/2	TK-WGZT-040-150	1.1/2	48.3	2.6
	2	TK-WGZT-050-200	2	60.3	2.9
	2.1/2	TK-WGZT-065-250	2.1/2	76.1	2.9
	3	TK-WGZT-080-300	3	88.9	3.2
	4	TK-WGZT-100-400	4	114.3	3.6

# INDUSTRIAL FITTINGS - couplings

## Flange adapter

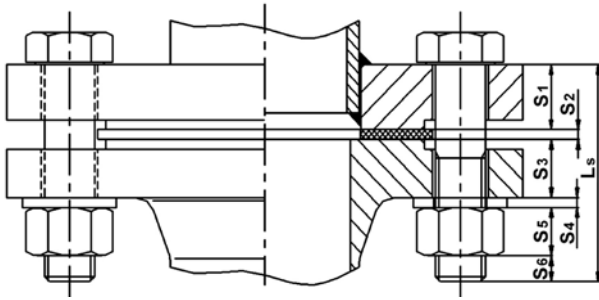
**Material:** Carbon steel, AISI 316 steel (add SS-316 to a code)

Flange adapter according to EN1092-1 PN16. Optionally available with swivel flanges and flanges according to ANSI B16.5. Joined by a butt weld with a joint quality level „B” according to EN ISO 5817.

picture	size [inch]	code	codes of elements			length L [mm]
			PN16 flange	adaptor	PN16 flange	
	DN32 / DN25	TK-ZKR-032-025	TK-KSS-032	TK-RS-042-033	TK-KSS-025	136
	DN40 / DN32	TK-ZKR-040-032	TK-KSS-040	TK-RS-048-042	TK-KSS-032	155
	DN50 / DN40	TK-ZKR-050-040	TK-KSS-050	TK-RS-060-048	TK-KSS-040	170
	DN65 / DN50	TK-ZKR-065-050	TK-KSS-065	TK-RS-076-060	TK-KSS-050	184
	DN80 / DN65	TK-ZKR-080-065	TK-KSS-080	TK-RS-088-076	TK-KSS-065	189
	DN100 / DN80	TK-ZKR-114-080	TK-KSS-100	TK-RS-114-088	TK-KSS-080	206
	DN125 / DN100	TK-ZKR-125-100	TK-KSS-125	TK-RS-139-114	TK-KSS-100	238

# INDUSTRIAL FITTINGS - couplings

## Bolts and nuts for flange connections



Required bolt length  $L_s$ :

$$L_s = S_1 + S_2 + S_3 + S_4 + S_5 + S_6 \text{ [mm]}$$

- $L_s$  - required bolt length [mm]
- $S_1, S_3$  - connected flange thickness [mm]
- $S_2$  - seal thickness [mm]
- $S_4$  - washer thickness [mm]
- $S_5$  - nut thickness [mm]
- $S_6$  - thread length behind a nut [mm]  
( $S_6 > 2 \times$  thread pitch)

The selection procedure of bolts and nuts for flanges made according to EN 1092 and EN 1759 standard should comply with EN 1515-1.

### Length of bolts for flange connections (EN 1092)

DN	neck fixed flange type 11,12,13 with neck fixed flange type 11,12,13				neck fixed flange type 11,12,13 with swivel flange type 4/34, 2.32				swivel flange type 4/34, 2.32 with swivel flange type 4/34, 2.32				flat fixed flange type 01B, 01A with flat fixed flange type 01B, 01A			
	PN10	PN16	PN25	PN40	PN10	PN16	PN25	PN40	PN10	PN16	PN25	PN40	PN10	PN16	PN25	PN40
10	55	55	55	55	60	60	60	60	70	70	70	70	50	50	50	50
15	55	55	55	55	60	60	60	60	70	70	70	70	50	50	50	50
20	55	55	55	55	70	70	70	70	80	80	80	80	50	50	50	50
25	55	55	55	55	70	70	70	70	80	80	80	80	50	50	50	50
32	60	60	60	60	75	75	75	75	90	90	90	90	60	60	60	60
40	60	60	60	60	75	75	75	75	90	90	90	90	60	60	60	60
50	60	60	65	65	80	80	80	80	95	95	95	95	65	65	65	65
65	60	60	70	70	80	80	85	85	95	95	100	100	65	65	70	70
80	65	65	70	70	80	80	90	90	95	95	110	110	65	65	70	70
100	65	65	75	75	85	85	100	100	110	110	120	120	70	70	80	80
125	70	70	90	90	85	85	110	110	110	110	140	140	70	70	90	90
150	70	70	90	90	100	100	120	120	120	120	140	140	75	75	100	100

### Number and size of bolts for flange connection (EN 1092)

flange type		neck fixed flange 11,12,13, swivel flange type 4/34, 2.32, flat fixed flange type 01B, 01A											
DN		10	15	20	25	32	40	50	65	80	100	125	150
screw size	PN10/16	M12	M12	M12	M12	M16	M16	M16	M16	M16	M16	M16	M20
	PN25/40	M12	M12	M12	M12	M16	M16	M16	M16	M16	M20	M24	M24
screw number		4	4	4	4	4	4	4	8	8	8	8	8

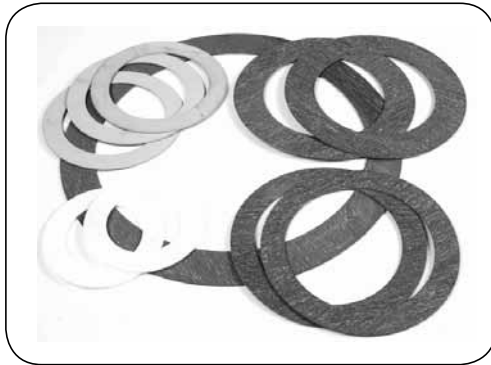
### The structure of an assembly set code

<b>TK</b>	-	<b>SZ1</b>	-	<b>M12</b>	-	<b>050</b>	-	<b>A</b>	-	<b>PG</b>
set type		thread size	length [mm]		mechanical properties grade or steel grade			material		
SZ1 set  bolts DIN931- 4 pcs nuts DIN934 - 4 pcs washers DIN125A- 4 pcs		M12	50, 55, 60, 70, 80		A - 5.6 B - A2-70			PG carbon steel (galvanized)  SS AISI 304 steel		
		M16	60, 65, 70, 75, 80, 85, 90, 95, 100, 110							
		M20	70, 75, 80, 100, 120							
		M24	90, 110, 120, 140							

Other materials, grades of mechanical properties are available on request. The selection of materials and grades of bolts should be based on EN 1515-1 standard, and primarily a flange PN as well as temperature range.

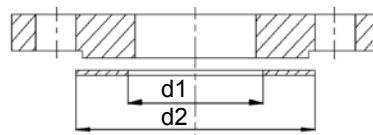
# INDUSTRIAL FITTINGS - couplings

## Flat seals for flange connection



**Material:** KLINGER SIL 4430, PTFE, EPDM  
**Working press.:** Up to 100 bar - KLINGER SIL 4430  
 Up to 300 bar - PTFE  
 Up to 60 bar - EPDM  
**Working temp.:** From -200°C up to +400°C - KLINGER SIL 4430  
 From -200°C up to +220°C - PTFE  
 From -30°C up to +120°C - EPDM

- PN flange flat seals made according to PN-EN 1514-1.
- ASA flange flat seals made according to ASME B16.21ANSI.
- Permissible working pressure of a particular seal depends on a type and temperature of the medium. For proper seal selection contact Sales or Technical Department of TUBES INTERNATIONAL®.
- When selecting the seal, check that d2 dimension is suitable for your flange class. Example: DN10 PN40 seal is suitable for PN10, PN16 and PN25 classes. The code applies to the highest class.



IBC seal dimensions for PN flanges

DN	d1 [mm]	d2 [mm]				
		PN6	PN10	PN16	PN25	PN40
10	18	39		46		
15	22	44		51		
20	27	54		61		
25	34	64		71		
32	43	76		82		
40	49	86		92		
50	61	96		107		
60	72	106		117		
65	77	116		127		
80	89	132		142		
100	115	152	162		168	
125	141	182	192		194	
150	169	207	218		224	
200	220	262	273	284	290	
250	273	317	328	329	340	352
300	324	373	378	384	400	417

IBC (Flat Ring) seal dimensions for ASA flanges

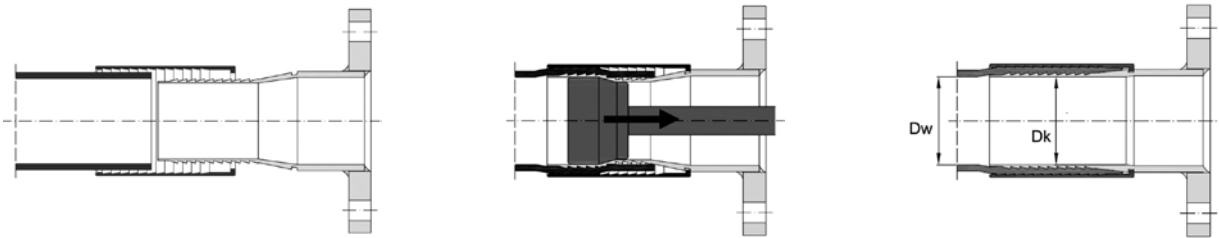
NPS	DN	d1 [mm]	d2 [mm]			
			ASA 150	ASA 300	ASA 400	ASA 600
1/2"	15	21	48		54	
3/4"	20	27	57		67	
1"	25	33	67		73	
1.1/4"	32	42	76		83	
1.1/2"	40	48	86		95	
2"	50	60	105		111	
2.1/2"	65	73	124		130	
3"	80	89	137		149	
3.1/2"	90	102	162	165	162	
4"	100	114	175	181	178	194
5"	125	141	197	216	213	241
6"	150	168	222	251	248	267
8"	200	219	279	308	305	321
10"	250	273	340	362	359	400
12"	300	324	410	422	419	457

The structure of a flange seal code

<b>TK</b>	-	<b>UK</b>	-	<b>IBC</b>	-	<b>PN06</b>	-	<b>010</b>	-	<b>T</b>	-	<b>3</b>
application	seal type		flange class		size		material		thickness [mm]			
flange seal	IBC - inside bolt circle FF - flat face TG - tongue and groove SR - spigot and recess		PN6, PN10, PN16, PN25, PN40		DN10 ÷ DN300		T - PTFE E - EPDM 4430 - KLINGER SIL 4430		standard: 2; 3 options: 0.25; 0.4; 0.5; 0.8; 1; 1.5; 4; 5; 6.4			
			ASA 150, ASA 300, ASA 400, ASA 600		DN15 ÷ DN300							

## Fittings for internal swaging

An internal swaging system was developed to provide permanent and safe fitting-hose connection. It ensures full and unrestricted flow through the fitting of a flexible hose assembly. The system utilizes a cold forming method - a mechanical method of fitting attachment. The key part of the system is a hardened, cone shaped swaging tool. The diameter of the tool in its widest, working part is slightly bigger than the internal diameter of the fitting before crimping. The tool is pulled down the inside of the fitting so it expands to a desired diameter. The tail of the fitting compresses the hose against the ferrule. The internal swaging is opposite to traditional external crimping of ferrules as far as the process itself is concerned. The connection is achieved from the inside outwards, yet on the outside.



The main advantage of internal swaging over external crimping is the increase in a flow rate, because:

- when externally crimped, the hose tail of a fitting (inserted into the hose) reduces the flow diameter by the thickness of its wall;
- when internally swaged, the wall of the hose tail is entirely pushed into the hose. The inside flow diameters of both the hose and its fitting are the same  $D_w = D_k$ .

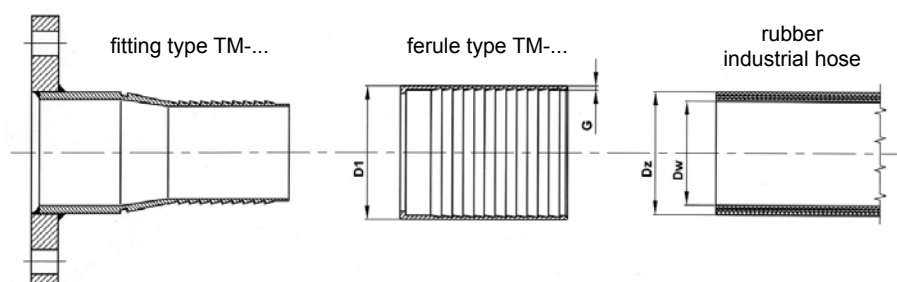
Example for DN76 (3") hose, when the flow rate through the fitting amounts to  $w = 4$  m/s.

x	Dk [mm]	area S [cm <sup>2</sup> ]	flow rate Q [l/min]
external crimping	70.5	39	936
internal crimping	76	45.3	1088
gain (external / internal)	+7.8%	+16%	+16%

The bigger the flow rate, the shorter the reloading time - that makes the internal swaging method really cost-effective. Another advantage is the lack of obstacles and no turbulence at the tip of a hose tail which is crucial for the transfer of dry and loose or semi-fluid products (granules, grain, cement, concrete, etc.). The internal swaging system can be used for the majority of rubber industrial hoses from 2" (DN50) to 12" (DN300). It is particularly recommended for water and air hoses, fuels and other petrochemical products, delivery hoses for solids and for foodstuffs.

## Fitting and ferrule selection

Internal swaging requires special fittings and ferrules (TM type). The ferrule is selected according to hose DN and its external diameter Dz (see picture below). Assemble in accordance with IT-86 manual. The maximum working pressure for internally swaged fittings is 20 bar. The maximum working pressure of the complete flexible hose assembly is also limited by the working pressure of connections (e.g. PN16 flange) and by the working pressure of the hose.



# INDUSTRIAL FITTINGS - couplings

## Fittings for internal swaging

### Fittings

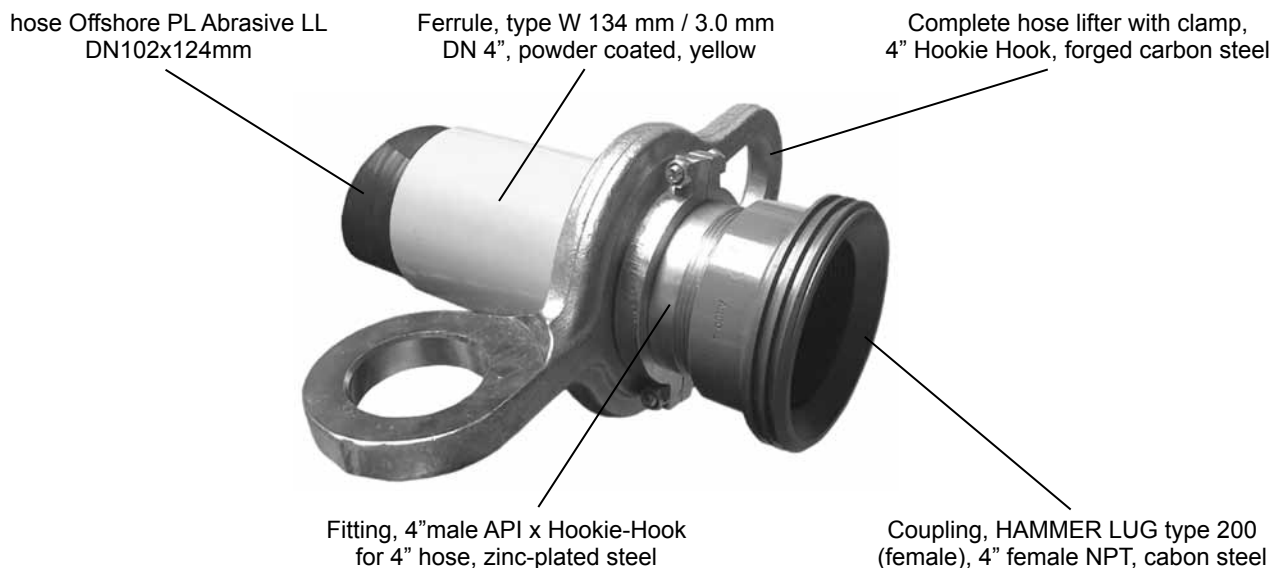
Material: galvanized carbon steel (for TM-KS-... - without galvanizing); AISI 316 stainless steel (add SS to a code). Maximum working pressure: 20 bar. The maximum working pressure of a complete flexible hose assembly is additionally limited by the working pressure of the connector (e.g. PN16 flange) and the working pressure of the hose.

fittings with male thread					weld-in fittings		PN16 flanges		
hose DN [mm]	thread [inch]	BSP code	BSPT code	API / NPT code	d [mm]	code	DN [mm]	fixed flange code	swivel flange code
50	2	TM-KZBP-050	TM-KZBT-050	TM-KZNT-050	60.3	TM-KS-050	50	TM-KKS-050	TM-KKO-050
65	2.1/2	TM-KZBP-065	TM-KZBT-065	TM-KZNT-065	76.1	TM-KS -065	65	TM-KKS-065	TM-KKO-065
75	3	TM-KZBP-075	TM-KZBT-075	TM-KZNT-075	88.9	TM-KS -075	75	TM-KKS-075	TM-KKO-075
80	3	TM-KZBP-080	TM-KZBT-080	TM-KZNT-080	88.9	TM-KS -080	80	TM-KKS-080	TM-KKO-080
100	4	TM-KZBP-100	TM-KZBT-100	TM-KZNT-100	114.3	TM-KS -100	100	TM-KKS-100	TM-KKO-100
125	5	TM-KZBP-125	TM-KZBT-125	TM-KZNT-125	139.7	TM-KS -125	125	TM-KKS-125	TM-KKO-125
150	6	TM-KZBP-150	TM-KZBT-150	TM-KZNT-150	168.3	TM-KS -150	150	TM-KKS-150	TM-KKO-150
200	8	TM-KZBP-200	TM-KZBT-200	TM-KZNT-200	219.1	TM-KS -200	200	TM-KKS-200	TM-KKO-200

ASA 150 and ASA 300 flange fittings (in accordance with American ANSI B16.5 standard), groove fittings and fittings of a „Hookie-Hook” type (with space to accommodate a hose lifter) with API male thread for off-shore application are also available.

### Example of internally swaged fitting

Hose assembly ABRASIVE/LL DN102, total length 45 m, with female thread fittings according to API (NPT) specification with Hookie Hook type hose lifter.



Because a ferrule is not mechanically deformed in the internal swaging process and powder coating finish on top of the ferrule is undamaged, a colour coding system can be easily introduced.

The colour coding system for industrial hoses, especially for offshore application is recommended by Oil & Gas UK (formerly UKOOA - United Kingdom Offshore Operators Association).

# INDUSTRIAL FITTINGS - couplings

## Fittings for internal crimping

### Ferrules

Material: galvanized carbon steel, AISI 304 steel (code example: TM-W-025-035-SS).

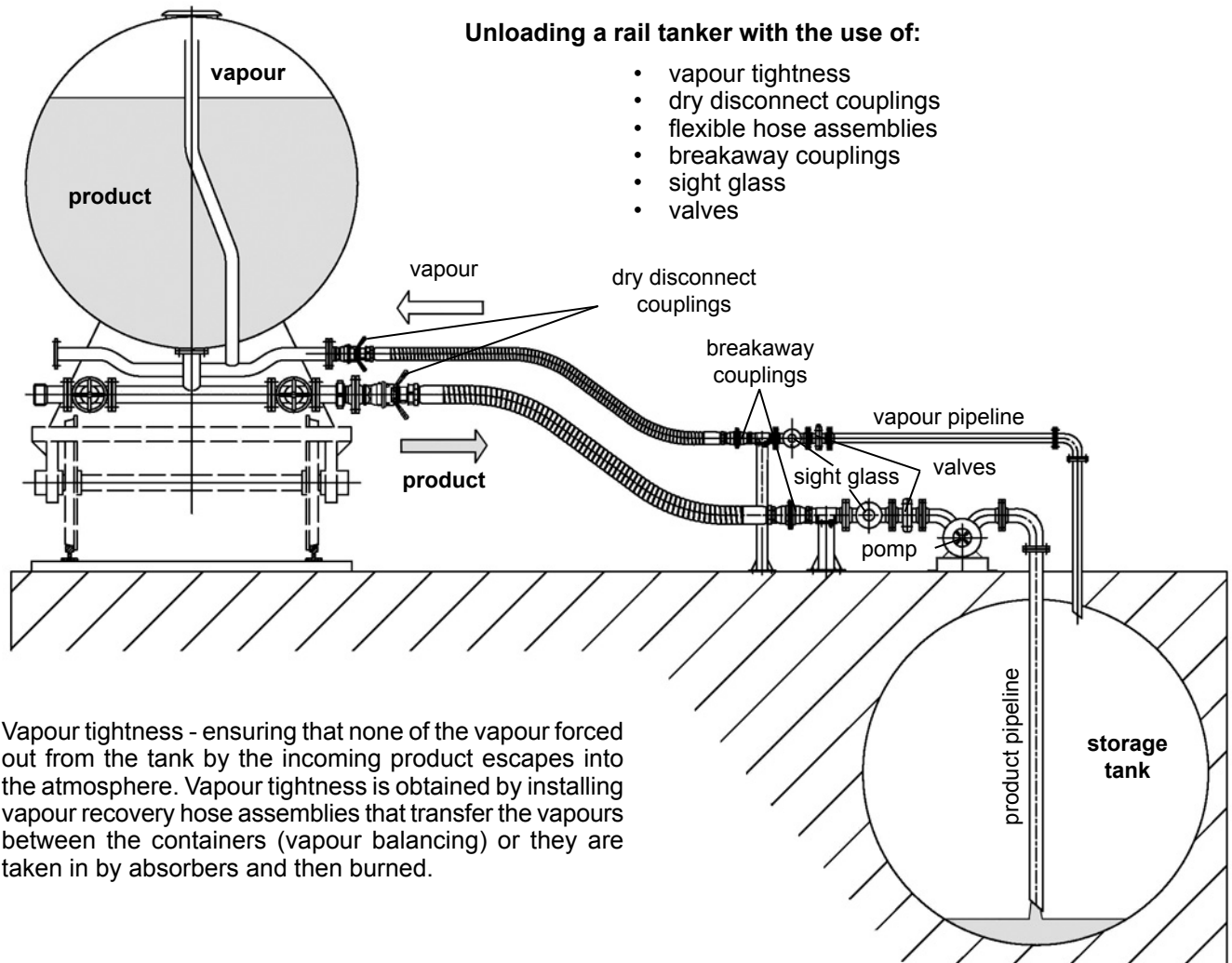
hose O.D. [mm]	hose nominal diameter				
	DN25 1"	DN32 1.1/4"	DN40 1.1/2"	DN50 2"	DN65 2.1/2"
35÷36.5	TM-W-025-035	-	-	-	-
37÷38.5	TM-W-025-037	-	-	-	-
39÷40.5	TM-W-025-039	TM-W-032-039	-	-	-
41÷42.5	-	TM-W-032-041	-	-	-
43÷44.5	-	TM-W-032-043	-	-	-
45÷46.5	-	TM-W-032-045	-	-	-
47÷48.5	-	TM-W-032-047	TM-W-040-047	-	-
49÷50.5	-	-	TM-W-040-049	-	-
51÷52.5	-	-	TM-W-040-051	-	-
53÷54.5	-	-	TM-W-040-053	-	-
55÷56.5	-	-	TM-W-040-055	-	-
57÷58.5	-	-	TM-W-040-057	-	-
63÷64.5	-	-	-	TM-W-050-063	-
65÷66.5	-	-	-	TM-W-050-065	-
67÷68.5	-	-	-	TM-W-050-067	-
69÷70.5	-	-	-	TM-W-050-069	-
71÷72.5	-	-	-	TM-W-050-071	-
73÷74.5	-	-	-	TM-W-050-073	-
75÷76.5	-	-	-	TM-W-050-075	TM-W-065-075
77÷78.5	-	-	-	-	TM-W-065-077
79÷80.5	-	-	-	-	TM-W-065-079
81÷82.5	-	-	-	-	TM-W-065-081
83÷84.5	-	-	-	-	TM-W-065-083
85÷86.5	-	-	-	-	TM-W-065-085

hose O.D. [mm]	hose nominal diameter				
	DN80 3"	DN100 4"	DN125 5"	DN150 6"	DN200 8"
88÷90	TM-W-080-088	-	-	-	-
90.5÷92.5	TM-W-080-090	-	-	-	-
93÷95	TM-W-080-093	-	-	-	-
95.5÷97.5	TM-W-080-095	-	-	-	-
98÷100	TM-W-080-098	-	-	-	-
116÷118.5	-	TM-W-100-116	-	-	-
119÷121.5	-	TM-W-100-119	-	-	-
122÷124.5	-	TM-W-100-122	-	-	-
125÷127.5	-	TM-W-100-125	-	-	-
128÷129.5	-	TM-W-100-128	-	-	-
142÷144.5	-	-	TM-W-125-142	-	-
146÷148.5	-	-	TM-W-125-146	-	-
149÷151.5	-	-	TM-W-125-149	-	-
152÷154.5	-	-	TM-W-125-152	-	-
155÷157.5	-	-	TM-W-125-155	-	-
168÷170.5	-	-	-	TM-W-150-168	-
171÷173.5	-	-	-	TM-W-150-171	-
174÷176.5	-	-	-	TM-W-150-174	-
177÷179.5	-	-	-	TM-W-150-177	-
180÷182.5	-	-	-	TM-W-150-180	-
223÷225.5	-	-	-	-	TM-W-200-223
226÷228.5	-	-	-	-	TM-W-200-226
229÷231.5	-	-	-	-	TM-W-200-229
232÷236.5	-	-	-	-	TM-W-200-232



## Reloading couplings - application in transport

Reloading couplings are designed for loading and unloading of various transport containers (intermediate bulk containers, tank trucks, rail tankers, tankers). Flexible hose assemblies or rigid loading arms equipped with couplings are used to load or unload products. The flexible hose assembly used for reloading is a part of transport container equipment (e.g. tank truck) or loading terminal, then it is a part of the device for filling and emptying. Reloading hose assemblies and loading installations are under strict control of appropriate authorities (in Poland - Transportation Technical Supervision).



Vapour tightness - ensuring that none of the vapour forced out from the tank by the incoming product escapes into the atmosphere. Vapour tightness is obtained by installing vapour recovery hose assemblies that transfer the vapours between the containers (vapour balancing) or they are taken in by absorbers and then burned.

coupling function	coupling types	application			
		IBC	tank trucks	rail tanker	tank ships
couplings	flange		•	•	•
	threaded rail			•	
	IBC	•			
	CAMLOCK	•	•	•	•
	TW (tankwagen)		•		
	STORZ, GUILLEMIN		•		
	lever (PERROT, LAUX, BAUER)		•	•	
dry disconnect	swivel		•	•	•
	API		•		
breakaway	dry disconnect	•	•	•	•
	INDUSTRIAL		•	•	
	MARINE				•

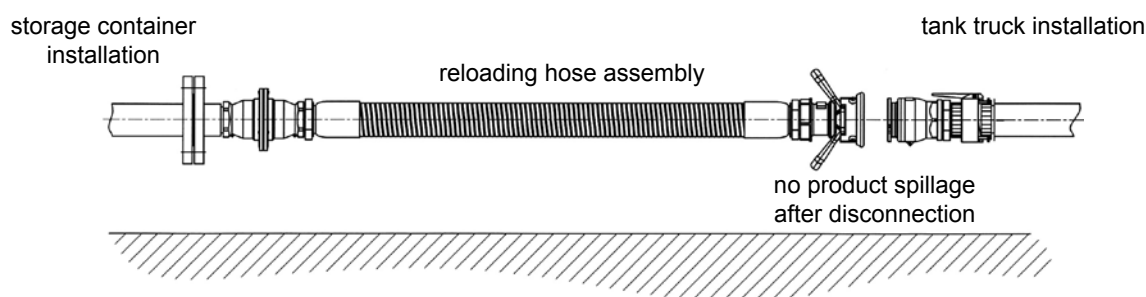
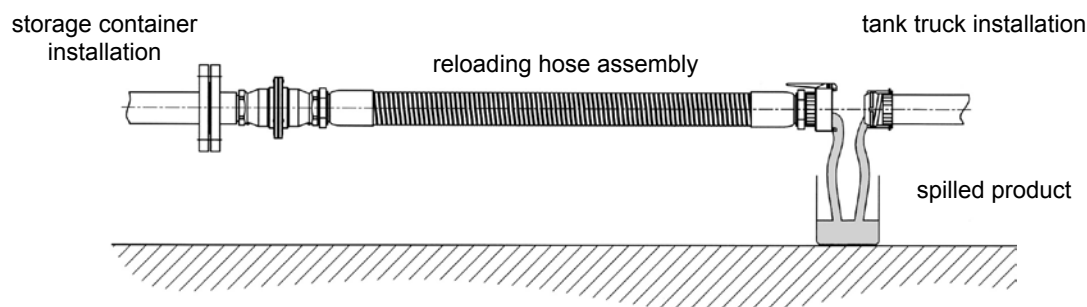
# INDUSTRIAL FITTINGS - couplings

## Dry disconnect coupling - operation and types







Dry disconnect couplings are designed for fast connection and disconnection of a hose assembly and installation with minimum or no product spillage.

Advantages:

- protects the operator, production plant and environment against a hazardous product,
- protects the product in installation against contamination,
- protects against the loss of expensive product.



### Types of available dry disconnect couplings

coupling type	standard	picture	technical data					
			principle of operation	max. working pressure [bar]	size [inch]	spillage [ml]	mat.	main application
API	API RP 1004 PN-EN 13083		piston valve-based	10	4	up to 5	Al	fuel - tank trucks
DDC	STANAG 3756			25	3/4 ÷ 8	0.5 ÷ 2.2	Al Ms SS	typical reloading standard (fuel. chemical industry)
DGC				25	1 ÷ 4	0.2 ÷ 1.6	SS	for gases (LPG)
DAC	STANAG 3105 ISO 45			10	2.1/2	1.1	Al	aviation fuel
DRY-DIS TR	producer's			25	1 ÷ 4	0.2 ÷ 0.6	Ms SS	reloading. industrial installations (hazardous chemical industry)
DRY-LINK	producer's		butterfly valve-based	14.3	1 ÷ 4	0	SS	industrial installations (chemical. food. pharmaceutical industry)
EPSILON	producer's		ball valve-based	30	1 ÷ 3	0.7 ÷ 2	SS	reloading. industrial installations (chemical industry)
DRY-MATE	producer's			7	1.1/2 ÷ 2 1 ÷ 2	2 1 ÷ 2	PP SS	reloading. industrial installations (light chemical industry)

## INDUSTRIAL FITTINGS - couplings

### Dry disconnect couplings - API



<b>Material:</b>	Aluminium
<b>Seals:</b>	Coupler - NBR (option Viton-B, Viton GFLT) Adaptor - Baylast™ resistant to fuel, including biodiesel (option - Viton, PTFE)
<b>Connection:</b>	4" TTMA flange
<b>Working temp.:</b>	From -20°C up to +50°C

#### Operation:

There are two types of API couplings: for liquid phase products (fuel) and gaseous phase (vapour). API couplings for liquid-phase are manufactured in one size, 4" API. Since API are dry disconnect couplings, a coupler (hose unit) and an adaptor (tank unit) are equipped with piston valves which open when the coupler lever is turned. However it cannot be turned unless the coupler is properly connected to the adaptor. If it is necessary, the valve of the adaptor on the tank can be opened separately, without connecting with the coupler. API vapour coupling is usually of CAMLOCK 4" type. It has a valve in the adaptor (tank unit), which opens with a pilot - a probe inside of the CAMLOCK coupler (hose unit). Along with the API range, gravity drop couplings are also available.

#### Application:

API couplings are designed for bottom loading and unloading of fuel tank trucks. They usually make a part of bottom loading arms at storage terminals (at fuel storage facility). The bottom loading method is widely used in petrochemical industry as its cost-effectiveness, safety and loading speed rate outperforms a top loading method. A bottom loading island is much cheaper to build than a top loading rack. A person operating the loading arm remains on the ground which is the safety advantage of the method. The bottom loading reduces the build-up of electrostatic charge and vapours. Tanks can be filled much faster (whole process is on the ground level) and a number of compartments can be loaded at the same time. All benefits of the method make it increasingly popular.

#### Standard:

API couplings are designed and manufactured in compliance with API RP-1004 (American Petroleum Institute). There are two counterparts of this standard: EN 13083 that applies to the coupling's adaptor for bottom loading and unloading and EN 13081 that applies to both adaptor and coupler for vapour recovery. The couplings are compatible with the couplings of other brands compliant with the standards.



Connecting API coupling - a coupler (hose unit) with an adaptor (tank unit).



The valve of the adaptor for bottom unloading can be opened with a lever  
- separately without connecting with the coupler.

# INDUSTRIAL FITTINGS - couplings







## Dry disconnect couplings - API

Each bottom loading / unloading system can be divided into two parts:

- for liquid phase (fuel),
- for gaseous phase (vapour).

**Liquid phase (fuel)** - intended for fuel transfer. There is API coupling on a tank truck (tank unit - adaptor) which connects with API coupling of a hose assembly (hose unit - coupler). It **works as a dry disconnect coupling** and is usually used when there is a loading arm at the terminal.

The hose assembly with a standard CAMLOCK coupling (coupler) can also be connected to a tank truck. In this case, it is required to fit a gravity drop coupling on API tank truck coupling. However the application of such couplings **does not work as a dry disconnect coupling**.

picture	code	connection 1 / 2	medium*	working pressure [bar]	seal	characteristics
	DX-API-5400-B	4" TTMA flange 4" API	1, 2, 3, 5, 6, 7, 8	10	Viton-B	Coupler(hose unit) for bottom loading and unloading. Max. flow: 2271 l/min. Pressure drop: 0.27 bar. DX-API-5300BC version is intended for crude oil.
	DX-API-5400-G		1, 2, 3, 5, 6, 7, 8		Viton-GFLT	
	DX-API-5400		1, 2, 3, 5, 6, 7		NBR	
	DX-API-5300-BC		1, 2, 3, 4, 5, 6, 7, 8		Viton-B	
	DX-API-5204-LNG	4" TTMA flange 4" API	1, 2, 3, 5, 6, 7, 8	6	Baylast™	Adaptor (tank unit) for bottom loading, without sight glass.
	DX-API-5204-LSNG		1, 2, 3, 4, 5, 6, 7, 8		Baylast™	Adaptor (tank unit) for bottom loading, without sight glass. Version intended for crude oil.
	DX-API-5204-L		1, 2, 3, 5, 6, 7, 8		Baylast™	Adaptor (tank unit) for bottom loading, with sight glass.
	DX-API-5204-SNG	4" TTMA flange 4" API	1, 2, 3, 4, 5, 6, 7, 8	6	Baylast™	Adaptor (tank unit) for bottom loading and unloading, without sight glass. Version intended for crude oil.
	DX-API-5204-NG		1, 2, 3, 5, 6, 7, 8		Baylast™	Adaptor (tank unit) for bottom loading and unloading, without sight glass. Option - with removable handle (DX-API-5204NGC).
	DX-API-5204-NGV		1, 2, 3, 7, 8		Viton	Adaptor (tank unit) for bottom loading and unloading, without sight glass.
	DX-API-5204	4" TTMA flange 4" API	1, 2, 3, 5, 7, 8	6	Baylast™	Adaptor (tank unit) with sight glass for bottom loading and unloading (handle allows manual opening of valve when coupling is disconnected). Option - with removable handle (DX-API-5204C).
	DX-API-5000-25	4" API		-	NBR	Adaptor cap (DX-API-5204 coupling). Material: nylon.
	DX-API-5000-24	4" API		-	Baylast™	Adaptor cap (DX-API-5204 coupling). Material: aluminium.

\* 1 - petrol, 2 - diesel, 3 - ULSD, 4 - crude oil, 5 - E20 (20% ethanol and 80% petrol),  
6 - E100 (100% ethanol), 7 - B20 (20% biodiesel and 80% diesel), 8 - B100 (100% biodiesel).

# INDUSTRIAL FITTINGS - couplings

## Vapour recovery couplings - API

**Gaseous phase (vapour)** - intended for vapour transfer (vapour tightness). A hose with a special vapour coupling (coupler with a pilot which opens a valve) is connected to an adaptor with a vapour valve on a tank truck.





picture	code	connection 1 / 2	medium*	working pressure [bar]	seal	characteristics
	ZP-VR-ZPO300-A	BSP 3" female CAMLOCK 3"	1, 2, 3, 5, 6, 7, 8	6	NBR	Vapour recovery coupling with valve (CAMLOCK A with female thread).
	ZP-VR-ZPO400-A	BSP 4" female CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7, 8		NBR	
	DX-API-VR4000	4" flange TTMA CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7	1.4	Viton / NBR	Vapour valve (Viton) with drain plug and two sight glasses (NBR).
	DX-API-4050-AL	CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7	-	NBR	Vapour valve cap. Material: aluminium.
	DX-API-4050-ALC	CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7	-	NBR	Vapour valve cap with chain. Material: aluminium.
	DX-API-4050-PL	CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7	-	NBR	Vapour valve cap. Material: nylon.
	DX-API-4050-PLC	CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7	-	NBR	Vapour valve cap with chain. Material: nylon.
	ZP-VR-DVR300-A	BSP 3" female CAMLOCK 3"	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	Vapour recovery coupling with pilot without valve (CAMLOCK D with female thread).
	ZP-VR-DRVR4030-A	BSP 3" female CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	
	ZP-VR-DVR400-A	BSP 4" female CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	
	ZP-VR-DARVR4030-A	CAMLOCK 4" CAMLOCK 3"	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	Vapour recovery coupling with pilot without valve (CAMLOCK D / CAMLOCK A).
	ZP-VR-CVR300-A	CAMLOCK 3" DN75	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	Vapour recovery coupling with pilot without valve (CAMLOCK C with hose fitting). Version with valve available as well.
	ZP-VR-CVR400-A	CAMLOCK 4" DN100	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	
	DX-API-VR4030-CS-AL	CAMLOCK 4" DN75	1, 2, 3, 4, 7, 8	6	Viton / NBR	Vapour recovery coupling (NBR) with pilot and valve (Viton).

\* 1 - petrol, 2 - diesel, 3 - ULSD, 4 - crude oil, 5 - E20 (20% ethanol and 80% petrol),  
6 - E100 (100% ethanol), 7 - B20 (20% biodiesel and 80% diesel), 8 - B100 (100% biodiesel).

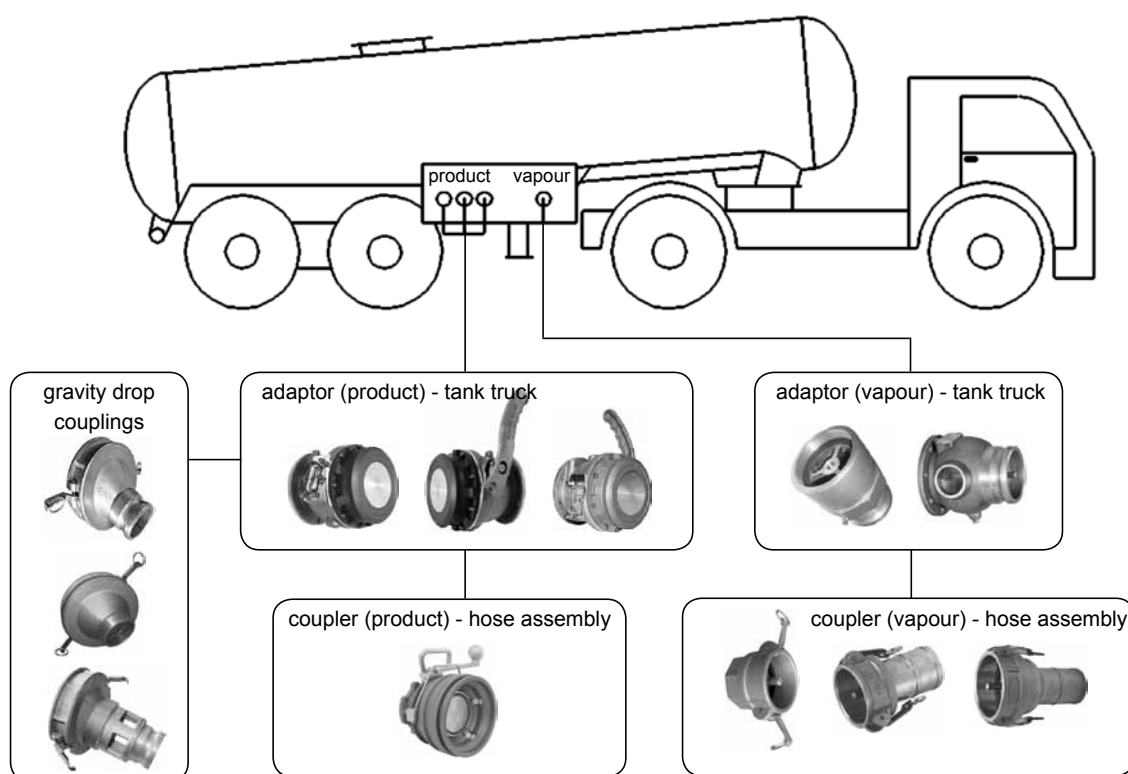
# INDUSTRIAL FITTINGS - couplings

## Gravity drop couplings (adapters to API couplings)

Gravity drop couplings are designed for gravity unloading. They allow for connection of API tank truck coupling with a regular reloading coupling e.g. CAMLOCK type.

picture	code	connection 1 / 2	medium*	working pressure [bar]	seal	characteristics
	ZP-API-OLS43-AI	4" API CAMLOCK 3"	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	One-piece gravity drop coupling, angle 45°. AISI 316 steel version available (CAMLOCK coupling straight fitted).
	ZP-API-OLS44-AI	4" API CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	
	ZP-API-OLS4GZ3-AI	4" API CAMLOCK 3"	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	One-piece gravity drop coupling, angle 45°. AISI 316 steel version available (thread connection straight fitted).
	ZP-API-OLS4GZ4-AI	4" API CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	
	ZP-API-OLSP43-AI	4" API CAMLOCK 3"	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	One-piece gravity drop coupling with sight glass, angle 45°.
	ZP-API-OLSP44-AI	4" API CAMLOCK 4"	1, 2, 3, 4, 5, 6, 7, 8	6	NBR	
	ZP-API-OLS4GZ3-AI	4" API	1, 2, 3, 4, 5, 6, 7, 8	-	NBR	Gravity drop coupling cap.

\* 1 - petrol, 2 - diesel, 3 - ULSD, 4 - crude oil, 5 - E20 (20% ethanol and 80% petrol), 6 - E100 (100% ethanol), 7 - B20 (20% biodiesel and 80% diesel), 8 - B100 (100% biodiesel).



# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DDC



**Material:** Aluminium, brass, AISI 316, titanium, PEEK, PVDF/Hastelloy, Hastelloy, Duplex

**Seals:** O-ring: FPM (Viton), EPDM, Chemraz, Kalrez, NBR  
Flat seal: PTFE, FPM/FKM (Viton), PUR, Thermpac (HBD)  
Other materials on request

**Connections:** BSP, NPT thread  
ANSI 150, 300, PN EN 1092-1 flange

**Working temp.:** From -25°C up to +80°C

The acceptable working temperature ranges from -54°C up to +250°C, but as it depends on the medium, confirm the working temperature of each application with Technical Department of TUBES INTERNATIONAL®.

### Operation

A hose unit (coupler) and a tank unit (adapter) of DDC type (Dry Disconnect Coupling) are both equipped with piston valves which can be opened only after the coupling is connected and closed before it is disconnected. It prevents spillage. The head of the hose unit is rotary (360°). To allow fluid flow, both units must be coupled by rotating the head of the hose unit about 100° clockwise. To stop the fluid flow, turn the head of the hose unit anticlockwise so the valves close and the coupling disconnects. A coded version of the coupling is also available. It prevents connecting the hose unit to the wrong tank unit, conveying other fluid. They are coded using slots of special dimension on the hose unit which mate only with pins on the corresponding tank unit.

### Application

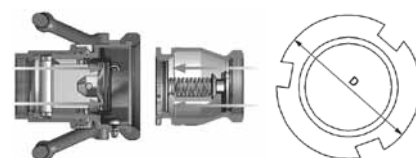
DDC couplings are widely used in road, rail, water and air transport, in petrochemical, chemical and pharmaceutical industry. They meet all requirements for safe, reliable and environment friendly transfer of hazardous, toxic or valuable products.

### Standards

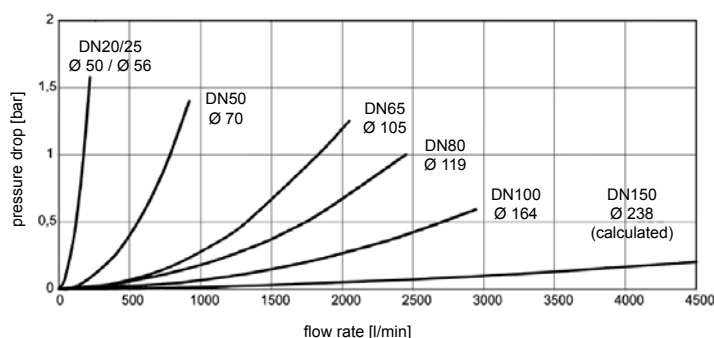
Manufactured according to NATO STANAG 3756 (DDC 2", 2.1/2", 3" and 4") and ATOFINA SGM 2049.TUY.C.(DDC 2", 3"). Meet the requirements of ATEX, TDT, ADR, RID, IMDG, Pressure Equipment Directive 97/23/WE. Approved by the European Chemical Industry Council - CEFIC.

### Flow rate, maximum spillage at disconnection

size [inch]	1	2	2.1/2	3	4	6	8
DN [mm]	25	50	65	80	100	150	200
tank unit diameter [mm]	56	70	105	119	164	238	272
max. flow rate [l/min]	200	900	1500	2000	3500	6000	8000
max. spillage [ml]	0.5	0.5	1.1	1.33	2.2	-	-



### Pressure drop vs. flow rate



### Test parameters:

Medium: n-paraffin  
Temperature: +20°C  
Density: 0.75 kg/dm<sup>3</sup>  
Viscosity: 1.75 mm<sup>2</sup>/s  
Stanag 3756. annex E

# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DDC

Tank unit- size 1" (Ø 56)


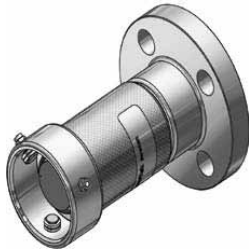

picture	code	connection	work. press. [bar]	material	seal		weight [kg]	
					O-ring	thread		
	MK-DDC-T101A1101B	3/4" BSP	16	aluminium	FPM FKM	PUR	0.30	
	MK-DDC-T103A1101B	1" BSP						
	MK-DDC-T105A1101B	1.1/4" BSP						
	MK-DDC-T101A2201B	3/4" BSP		brass			0.70	
	MK-DDC-T103A2201B	1" BSP						
	MK-DDC-T105A2201B	1.1/4" BSP						
	MK-DDC-T101A4401A	3/4" BSP	25	AISI 316	PTFE	0.80		
	MK-DDC-T103A4401A	1" BSP						
	MK-DDC-T105A4401A	1.1/4" BSP						
	MK-DDC-T101A7701A	3/4" BSP		Hastelloy		0.10		
	MK-DDC-T103A7701A	1" BSP						
	MK-DDC-T105A7701A	1.1/4" BSP						
	MK-DDC-T101A9901A	3/4" BSP	6	PEEK	FPM FKM	-	-	
	MK-DDC-T103A9901A	1" BSP						
	MK-DDC-T105A9901A	1.1/4" BSP						
	MK-DDC-T169A1101	3/4" BSP	16	aluminium	FPM FKM	-	-	
	MK-DDC-T171A1101	1" BSP						
	MK-DDC-T169A2201	3/4" BSP						
	MK-DDC-T171A2201	1" BSP	25	AISI 316				
	MK-DDC-T169A4401	3/4" BSP						
	MK-DDC-T171A4401	1" BSP						
	MK-DDC-T123A1101	DN25 PN10/16	16	aluminium	FPM FKM	-	1.10	
	MK-DDC-T124A1101	DN25 PN25/40						
	MK-DDC-T151A1101	1" ASA 150		brass				1.60
	MK-DDC-T152A1101	1" ASA 300						
	MK-DDC-T123A2201	DN25 PN10/16						
	MK-DDC-T124A2201	DN25 PN25/40						
	MK-DDC-T151A2201	1" ASA 150	25				AISI 316	1.50
	MK-DDC-T152A2201	1" ASA 300						
	MK-DDC-T123A4401	DN25 PN10/16						
	MK-DDC-T124A4401	DN25 PN25/40						
	MK-DDC-T151A4401	1" ASA 150		Hastelloy				1.70
	MK-DDC-T152A4401	1" ASA 300						
	MK-DDC-T123A7701	DN25 PN10/16						
	MK-DDC-T124A7701	DN25 PN25/40						
	MK-DDC-T151A7701	1" ASA 150	6				PEEK	0.20
	MK-DDC-T152A7701	1" ASA 300						
	MK-DDC-T123A9901	DN25 PN10/16						
	MK-DDC-T124A9901	DN25 PN25/40						
	MK-DDC-T151A9901	1" ASA 150						
	MK-DDC-T152A9901	1" ASA 300						
	MK-DDC-C100A2201	-	-	composite	FPM FKM	-	0.13	
	MK-DDC-C100A1101			aluminium			0.22	
	MK-DDC-C100A4401			AISI 316			0.59	
Repair kit set of O-rings	MK-DDC-O-T1-01	-	-	FPM FKM	-	-	-	
Repair kit flat seal	MK-1498-09	3/4" BSP	-	PUR	-	-	0.001	
	MK-1498-06			PTFE				
	MK-1220-09	1" BSP		PUR			0.002	
	MK-1220-06			PTFE				
	MK-1536-09	1.1/4" BSP		PUR			0.001	
	MK-1536-06			PTFE			0.003	
Set of spare parts	MK-DDC-S-T1-11	-	16	aluminium	-	-	-	
	MK-DDC-S-T1-22		brass					
	MK-DDC-S-T1-44		25	AISI 316				



# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DDC



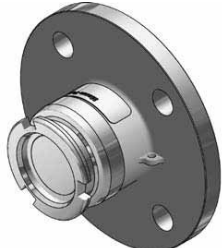
Hose unit - size 1" (Ø 56)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]				
					O-ring	thread					
	MK-DDC-S101A1101B	3/4" BSP	16	aluminium	FPM FKM	PUR	0.50				
	MK-DDC-S103A1101B	1" BSP									
	MK-DDC-S105A1101B	1.1/4" BSP		brass			1.40				
	MK-DDC-S101A2201B	3/4" BSP									
	MK-DDC-S103A2201B	1" BSP									
	MK-DDC-S105A2201B	1.1/4" BSP									
	MK-DDC-S101A4401A	3/4" BSP	25	AISI 316		PTFE	1.30				
	MK-DDC-S103A4401A	1" BSP									
	MK-DDC-S105A4401A	1.1/4" BSP		Hastelloy			1.50				
	MK-DDC-S101A7701A	3/4" BSP									
	MK-DDC-S103A7701A	1" BSP									
	MK-DDC-S105A7701A	1.1/4" BSP									
	MK-DDC-S101A9901A	3/4" BSP	6	PEEK		0.30					
	MK-DDC-S103A9901A	1" BSP									
	MK-DDC-S105A9901A	1.1/4" BSP									
	MK-DDC-S123A1101	DN25 PN10/16	16	aluminium	FPM FKM	-	1.10				
	MK-DDC-S124A1101	DN25 PN25/40									
	MK-DDC-S151A1101	1" ASA 150		brass			1.60				
	MK-DDC-S152A1101	1" ASA 300									
	MK-DDC-S123A2201	DN25 PN10/16						25	AISI 316	2.20	
	MK-DDC-S124A2201	DN25 PN25/40									
	MK-DDC-S151A2201	1" ASA 150	Hastelloy						2.50		
	MK-DDC-S152A2201	1" ASA 300									
	MK-DDC-S123A4401	DN25 PN10/16		6			PEEK				0.50
	MK-DDC-S124A4401	DN25 PN25/40									
	MK-DDC-S151A4401	1" ASA 150									
	MK-DDC-S152A4401	1" ASA 300									
	MK-DDC-S123A7701	DN25 PN10/16									
	MK-DDC-S124A7701	DN25 PN25/40									
	MK-DDC-S151A7701	1" ASA 150									
	MK-DDC-S152A7701	1" ASA 300									
	MK-DDC-S123A9901	DN25 PN10/16									
	MK-DDC-S124A9901	DN25 PN25/40									
MK-DDC-S151A9901	1" ASA 150										
MK-DDC-S152A9901	1" ASA 300										
	MK-DDC-P100A2201	-	-	composite	FPM FKM	-	0.06				
	MK-DDC-P100A1101			aluminium			0.12				
	MK-DDC-P100A4401			AISI 316			0.32				
Repair kit flat seal	MK-DDC-O-S1-01	-	-	FPM FKM	-	-					
Repair kit flat seal	MK-1498-09	3/4" BSP	-	PUR	-	-	0.001				
	MK-1498-06			PTFE							
	MK-1220-09	1" BSP		PUR			0.002				
	MK-1220-06			PTFE							
	MK-1536-09	1.1/4" BSP		PUR			0.001				
	MK-1536-06			PTFE			0.003				
Set of spare parts	MK-DDC-S-S1-11	-	16	aluminium	-	-	-				
	MK-DDC-S-S1-22		25	brass							
	MK-DDC-S-S1-44			AISI 316							

# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DDC


Tank unit - size 2" (Ø 70)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
<div>Tank unit with female thread</div> 	MK-DDC-T207A1101B	1.1/2 BSP	16	aluminium	FPM FKM	PUR	-
	MK-DDC-T210A1101B	2" BSP		brass			
	MK-DDC-T207A2201B	1.1/2 BSP					
	MK-DDC-T210A2201B	2" BSP					
	MK-DDC-T207A4401A	1.1/2 BSP	25	AISI 316	PTFE		
	MK-DDC-T210A4401A	2" BSP		Hastelloy			
	MK-DDC-T207A7701A	1.1/2 BSP					
	MK-DDC-T210A7701A	2" BSP					
	MK-DDC-T207A9901A	1.1/2 BSP	6	PEEK			
MK-DDC-T210A9901A	2" BSP						
<div>Tank unit with male thread</div> 	MK-DDC-T278A1101	2" BSP	16	aluminium	FPM FKM	-	-
	MK-DDC-T278A2201	2" BSP		brass			
	MK-DDC-T278A4401	2" BSP	25	AISI 316			
<div>Tank unit with flange</div> 	MK-DDC-T227B1101	DN40 PN10/16	16	aluminium	FPM FKM	-	-
	MK-DDC-T230B1101	DN50 PN10/16					
	MK-DDC-T255B1101	1.1/2" ASA 150					
	MK-DDC-T257B1101	2" ASA 150					
	MK-DDC-T227B2201	DN40 PN10/16		brass			
	MK-DDC-T228B2201	DN40 PN25/40					
	MK-DDC-T255B2201	1.1/2" ASA 150					
	MK-DDC-T256B2201	1.1/2" ASA 300					
	MK-DDC-T230B2201	DN50 PN10/16					
	MK-DDC-T231B2201	DN50 PN25/40					
	MK-DDC-T257B2201	2" ASA 150					
	MK-DDC-T258B2201	2" ASA 300					
	MK-DDC-T227B4401	DN40 PN10/16	25	AISI 316			
	MK-DDC-T228B4401	DN40 PN25/40					
	MK-DDC-T255B4401	1.1/2" ASA 150					
	MK-DDC-T256B4401	1.1/2" ASA 300					
	MK-DDC-T230B4401	DN50 PN10/16					
	MK-DDC-T231B4401	DN50 PN25/40					
	MK-DDC-T257B4401	2" ASA 150					
	MK-DDC-T258B4401	2" ASA 300					
	MK-DDC-T227A7701	DN40 PN10/16		Hastelloy			
	MK-DDC-T228A7701	DN40 PN25/40					
	MK-DDC-T255A7701	1.1/2" ASA 150					
	MK-DDC-T256A7701	1.1/2" ASA 300					
	MK-DDC-T230A7701	DN50 PN10/16					
	MK-DDC-T231A7701	DN50 PN25/40					
	MK-DDC-T257A7701	2" ASA 150					
	MK-DDC-T258A7701	2" ASA 300					
	MK-DDC-T227A9901	DN40 PN10/16	6	PEEK			
	MK-DDC-T255A9901	1.1/2" ASA 150					
	MK-DDC-T230A9901	DN50 PN10/16					
	MK-DDC-T257A9901	2" ASA 150					




# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DDC

### Tank unit - size 2" (Ø 70)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DDC-C200E2202	-	-	composite	NBR	-	-
	MK-DDC-C200A1101			aluminium	FPM FKM		
	MK-DDC-C200B4401			AISI 316			
	MK-DDC-C200D1300			NBR PVC	-		
Repair kit set of O-rings	MK-DDC-O-T2-01	-	-	FPM FKM	-	-	-
Repair kit flat seal	MK-1196-09	1.1/2 BSP	-	PUR	-	-	0.002
	MK-1196-06			PTFE			0.003
	MK-1052-09	2" BSP		PUR			0.004
	MK-1052-06			PTFE			
Set of spare parts	MK-DDC-S-T2-11	-	16	aluminium	-	-	-
	MK-DDC-S-T2-22		brass				
	MK-DDC-S-T2-44		AISI 316				



### Hose unit - size 2" (Ø 70)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DDC-S207A1101B	1.1/2" BSP	16	aluminium	FPM FKM	PUR	-
	MK-DDC-S210A1101B	2" BSP		brass			
	MK-DDC-S207A2201B	1.1/2" BSP		AISI 316			
	MK-DDC-S210A2201B	2" BSP		Hastelloy			
	MK-DDC-S207A4401A	1.1/2" BSP	25	AISI 316	FPM FKM	PTFE	-
	MK-DDC-S210A4401A	2" BSP		Hastelloy			
	MK-DDC-S207A7701A	1.1/2" BSP	6	PEEK			
	MK-DDC-S210A7701A	2" BSP					
	MK-DDC-S207A9901A	1.1/2" BSP					
	MK-DDC-S278A1101	2" BSP	16	aluminium	FPM FKM	-	-
	MK-DDC-S278A2201	2" BSP		brass			
	MK-DDC-S278A4401	2" BSP	25	AISI 316			
	MK-DDC-S227A1101	DN40 PN10/16	16	aluminium	FPM FKM	-	-
	MK-DDC-S230A1101	DN50 PN10/16					
	MK-DDC-S255A1101	1.1/2" ASA 150					
	MK-DDC-S256A1101	1.1/2" ASA 300					
	MK-DDC-S227A2201	DN40 PN10/16					
	MK-DDC-S228A2201	DN40 PN25/40					
	MK-DDC-S255A2201	1.1/2" ASA 150					
	MK-DDC-S256A2201	1.1/2" ASA 300					
	MK-DDC-S230A2201	DN50 PN10/16					
	MK-DDC-S231A2201	DN50 PN25/40					
	MK-DDC-S257A2201	2" ASA 150					
	MK-DDC-S258A2201	2" ASA 300					
	MK-DDC-S227A4401	DN40 PN10/16	25				
	MK-DDC-S228A4401	DN40 PN25/40					
	MK-DDC-S255A4401	1.1/2" ASA 150					
	MK-DDC-S256A4401	1.1/2" ASA 300					
	MK-DDC-S230A4401	DN50 PN10/16					
	MK-DDC-S231A4401	DN50 PN25/40					
	MK-DDC-S257A4401	2" ASA 150					
	MK-DDC-S258A4401	2" ASA 300					




# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DDC

### Hose unit - size 2" (Ø 70)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DDC-S227A7701	DN40 PN10/16	25	Hastelloy	FPM FKM	-	-
	MK-DDC-S228A7701	DN40 PN25/40					
	MK-DDC-S255A7701	1.1/2" ASA 150					
	MK-DDC-S256A7701	1.1/2" ASA 300					
	MK-DDC-S230A7701	DN50 PN10/16					
	MK-DDC-S231A7701	DN50 PN25/40					
	MK-DDC-S257A7701	2" ASA 150					
	MK-DDC-S258A7701	2" ASA 300					
	MK-DDC-S227A9901	DN40 PN10/16	6	PEEK	FPM FKM	-	-
	MK-DDC-S255A9901	1.1/2" ASA 150					
	MK-DDC-S230A9901	DN50 PN10/16					
	MK-DDC-S257A9901	2" ASA 150					
	MK-DDC-P200A2201	-	-	composite	FPM FKM	-	-
	MK-DDC-P200A1101			aluminium			
	MK-DDC-P200A4401			AISI 316			
Repair kit set of O-rings	MK-DDC-O-S2-01	-	-	FPM FKM	-	-	-
Repair kit flat seal	MK-1196-09	1.1/2 BSP	-	PUR	-	-	0.002
	MK-1196-06			PTFE			0.003
	MK-1052-09	2" BSP		PUR			0.004
	MK-1052-06			PTFE			
Set of spare parts	MK-DDC-S-S2-11	-	16	aluminium	-	-	-
	MK-DDC-S-S2-22		25	brass			
	MK-DDC-S-S2-44			AISI 316			



### Tank unit - size 2.1/2" (Ø 105)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]	
					O-ring	thread		
<div>Tank unit with female thread</div> 	MK-DDC-T312D1101B	2.1/2" BSP	10	aluminium	FPM FKM	PUR	-	
	MK-DDC-T314D1101B	3" BSP						
	MK-DDC-T312D2201B	2.1/2" BSP	16	bronze				
	MK-DDC-T314D2201B	3" BSP						
	MK-DDC-T312B4401A	2.1/2" BSP	25	AISI 316	PTFE			
	MK-DDC-T314B4401A	3" BSP						
	MK-DDC-T312A7701A	2.1/2" BSP		Hastelloy				
	MK-DDC-T314A7701A	3" BSP	6	PEEK				
	MK-DDC-T312A9901A	2.1/2" BSP						
MK-DDC-T314A9901A	3" BSP							
<div>Tank unit with male thread</div> 	MK-DDC-T380A1101	2.1/2" BSP	10	aluminium	FPM FKM	-	-	
	MK-DDC-T382A1101	3" BSP						
	MK-DDC-T380A2201	2.1/2" BSP	16	brass				
	MK-DDC-T382A2201	3" BSP						
	MK-DDC-T380A4401	2.1/2" BSP	25	AISI 316				
	MK-DDC-T382A4401	3" BSP						
<div>Tank unit with flange</div> 	MK-DDC-T333D1101	DN65 PN10/16	10	aluminium	FPM FKM	-	-	
	MK-DDC-T336D1101	DN80 PN10/16						
	MK-DDC-T359D1101	2.1/2" ASA 150						
	MK-DDC-T361D1101	3" ASA 150	16	bronze				
	MK-DDC-T333D2201	DN65 PN10/16						
	MK-DDC-T334D2201	DN65 PN25/40						
	MK-DDC-T336D2201	DN80 PN10/16						
	MK-DDC-T337D2201	DN80 PN25/40						
MK-DDC-T359D2201	2.1/2" ASA 150							



# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DDC

### Tank unit - size 2.1/2" (Ø 105)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DDC-T360D2201	2.1/2" ASA 300	16	bronze	FPM FKM	-	-
	MK-DDC-T361D2201	3" ASA 150					
	MK-DDC-T362D2201	3" ASA 300					
	MK-DDC-T367D2201	TTMA 3"					
	MK-DDC-T368D2201	TTMA 4"					
	MK-DDC-T333B4401	DN65 PN10/16	25	AISI 316			
	MK-DDC-T334B4401	DN65 PN25/40					
	MK-DDC-T336B4401	DN80 PN10/16					
	MK-DDC-T337B4401	DN80 PN25/40					
	MK-DDC-T359B4401	2.1/2" ASA 150					
	MK-DDC-T360B4401	2.1/2" ASA 300					
	MK-DDC-T361B4401	3" ASA 150					
	MK-DDC-T362B4401	3" ASA 300					
	MK-DDC-T367B4401	TTMA 3"					
	MK-DDC-T368B4401	TTMA 4"					
	MK-DDC-C300E2202	-	-	composite	NBR	-	-
	MK-DDC-C300B1101			aluminium	FPM FKM		
	MK-DDC-C300B4401			AISI 316			
Repair kit set of O-rings	MK-DDC-O-T3-01	-	-	FPM FKM	-	-	-
Repair kit flat seal	MK-1181-09	2.1/2" BSP	-	PUR	-	-	0.005
	MK-1181-06			PTFE			0.006
	MK-1110-09	3" BSP		PUR			0.007
	MK-1110-06			PTFE			
Set of spare parts	MK-DDC-S-T3-11	-	10	aluminium	-	-	-
	MK-DDC-S-T3-22		16	brass			
	MK-DDC-S-T3-44		25	AISI 316			

### Hose unit - size 2.1/2" (Ø 105)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]	
					O-ring	thread		
	MK-DDC-S312B1101B	2.1/2" BSP	10	aluminium	FPM FKM	PUR	-	
	MK-DDC-S314B1101B	3" BSP						
	MK-DDC-S312B2201B	2.1/2" BSP	16	bronze				
	MK-DDC-S314B2201B	3" BSP						
	MK-DDC-S312B4401A	2.1/2" BSP	25	AISI 316		PTFE		
	MK-DDC-S314B4401A	3" BSP						
	MK-DDC-S312A7701A	2.1/2" BSP		Hastelloy				
	MK-DDC-S314A7701A	3" BSP						
	MK-DDC-S312A9901A	2.1/2" BSP	6	PEEK				
MK-DDC-S314A9901A	3" BSP							
	MK-DDC-P300A2201	-	-	composite	FPM FKM	-	-	
	MK-DDC-P300A1101			aluminium				
	MK-DDC-P300A4401			AISI 316				
Repair kit set of O-rings	MK-DDC-O-S3-01	-	-	FPM FKM	-	-	-	
Repair kit flat seal	MK-1181-09	2.1/2" BSP	-	PUR	-	-	0.005	
	MK-1181-06			PTFE			0.006	
	MK-1110-09	3" BSP		PUR			0.007	
	MK-1110-06			PTFE				
Set of spare parts	MK-DDC-S-S3-11	-	10	aluminium	-	-	-	
	MK-DDC-S-S3-22		16	brass				
	MK-DDC-S-S3-44		25	AISI 316				

# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DDC




### Tank unit - size 3" (Ø 119)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DDC-T414D1101B	3" BSP	10	aluminium	FPM FKM	PUR	-
	MK-DDC-T414D2201B	3"BSP	16	bronze			
	MK-DDC-T414B4401A	3"BSP	25	AISI 316		PTFE	3.06
	MK-DDC-T414A7701A	3" BSP		Hastelloy			-
	MK-DDC-T414A8701A	3"BSP		PVDF Hastelloy			
	MK-DDC-T414A9901A	3" BSP	6	PEEK			
	MK-DDC-T433D1101	DN65 PN10/16	10	aluminium	FPM FKM	-	-
	MK-DDC-T436D1101	DN80 PN10/16					
	MK-DDC-T461D1101	3" ASA 150					
	MK-DDC-T467D1101	TTMA 3"					
	MK-DDC-T468D1101	TTMA 4"					
	MK-DDC-T433D2201	DN65 PN10/16	16	bronze			
	MK-DDC-T434D2201	DN65 PN25/40					
	MK-DDC-T436D2201	DN80 PN10/16					
	MK-DDC-T437D2201	DN80 PN25/40					
	MK-DDC-T461D2201	3" ASA 150					
	MK-DDC-T462D2201	3" ASA 300					
	MK-DDC-T467D2201	TTMA 3"					
	MK-DDC-T468D2201	TTMA 4"					
	MK-DDC-T433B4401	DN65 PN10/16	25	AISI 316			
	MK-DDC-T434B4401	DN65 PN25/40					
	MK-DDC-T436B4401	DN80 PN10/16					
	MK-DDC-T437B4401	DN80 PN25/40					
	MK-DDC-T461B4401	3" ASA 150					
	MK-DDC-T462B4401	3" ASA 300					
	MK-DDC-T467B4401	TTMA 3"					
	MK-DDC-T468B4401	TTMA 4"					
	MK-DDC-T436A9901	DN80 PN10/16	6	PEEK			
	MK-DDC-T461A9901	3" ASA 150					
	MK-DDC-T467A9901	TTMA 3"					
	MK-DDC-T468A9901	TTMA 4"					
	MK-DDC-C400E2202	-	-	composite	NBR	-	-
	MK-DDC-C400A1101			aluminium	FPM FKM		
	MK-DDC-C400B4401			AISI 316			
	MK-DDC-C400D1300			NBR PVC			
Repair kit set of O-rings	MK-DDC-O-T4-01	-	-	FPM FKM	-	-	-
Repair kit flat seal	MK-1110-09	3" BSP	-	PUR	-	-	0.006
	MK-1110-06			PTFE			0.007
Set of spare parts	MK-DDC-S-T4-11	-	10	aluminium	-	-	-
	MK-DDC-S-T4-22		16	brass			
	MK-DDC-S-T4-44		25	AISI 316			



# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DDC

### Hose unit - size 3" (Ø 119)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DDC-S414B1101B	3" BSP	10	aluminium	FPM FKM	PUR	-
	MK-DDC-S414B2201B	3"BSP	16	bronze			
	MK-DDC-S414B4401A	3"BSP	25	AISI 316		PTFE	8.65
	MK-DDC-S414A7701A	3" BSP		Hastelloy			-
	MK-DDC-S414A8701A	3"BSP		PVDF Hast.			
	MK-DDC-S414A9901A	3" BSP	6	PEEK			
	MK-DDC-S436B1101	DN80 PN10/16	10	aluminium	FPM FKM	-	-
	MK-DDC-S461B1101	3" ASA 150					
	MK-DDC-S467B1101	TTMA 3"					
	MK-DDC-S468B1101	TTMA 4"					
	MK-DDC-S436B2201	DN80 PN10/16	16	bronze			
	MK-DDC-S437B2201	DN80 PN25/40					
	MK-DDC-S461B2201	3" ASA 150					
	MK-DDC-S462B2201	3" ASA 300					
	MK-DDC-S467B2201	TTMA 3"	25	AISI 316			
	MK-DDC-S468B2201	TTMA 4"					
	MK-DDC-S436B4401	DN80 PN10/16					
	MK-DDC-S437B4401	DN80 PN25/40					
	MK-DDC-S461B4401	3" ASA 150					
	MK-DDC-S462B4401	3" ASA 300					
	MK-DDC-S467B4401	TTMA 3"					
	MK-DDC-S468B4401	TTMA 4"					
	MK-DDC-S436A9901	DN80 PN10/16	6	PEEK			
	MK-DDC-S461A9901	3" ASA 150					
	MK-DDC-P400A2201	-	-	composite	FPM FKM	-	-
	MK-DDC-P400A1101			aluminium			
	MK-DDC-P400A4401			AISI 316			
Repair kit set of O-rings	MK-DDC-O-S4-01	-	-	FPM FKM	-	-	-
Repair kit flat seal	MK-1110-09	3" BSP	-	PUR	-	-	0.006
	MK-1110-06			PTFE			0.007
Set of spare parts	MK-DDC-S-S4-11	-	10	aluminium	-	-	-
	MK-DDC-S-S4-22		16	brass			
	MK-DDC-S-S4-44		25	AISI 316			


### Tank unit - size 4" (Ø 164)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
<div>Tank unit with female thread</div> 	MK-DDC-T516A1101B	4" BSP	10	aluminium	FPM FKM	PUR	-
	MK-DDC-T516D2201B	4" BSP	16	bronze		PTFE	
	MK-DDC-T516B4401A	4" BSP	25	AISI 316			
<div>Tank unit with flange</div> 	MK-DDC-T539D1101	DN100 PN10/16	10	aluminium	FPM FKM	-	-
	MK-DDC-T563D1101	4" ASA 150					
	MK-DDC-T568D1101	TTMA 4"					
	MK-DDC-T539D2201	DN100 PN10/16	16	bronze			
	MK-DDC-T540D2201	DN100 PN25/40					
	MK-DDC-T563D2201	4" ASA 150					
	MK-DDC-T564D2201	4" ASA 300					
	MK-DDC-T568D2201	TTMA 4"	25	AISI 316			
	MK-DDC-T539B4401	DN100 PN10/16					
	MK-DDC-T540B4401	DN100 PN25/40					
	MK-DDC-T563B4401	4" ASA 150					
	MK-DDC-T564B4401	4" ASA 300					
	MK-DDC-T568B4401	TTMA 4"					




# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DDC

### Tank unit - size 4" (Ø 164)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DDC-C500E2202	-	-	composite	NBR	-	-
	MK-DDC-C500B1101			aluminium	FPM FKM		
	MK-DDC-C500C4401			AISI 316			
Repair kit set of O-rings	MK-DDC-O-T5-01	-	-	FPM FKM	-	-	-
Repair kit flat seal	MK-1295-09	4" BSP	-	PUR	-	-	0.010
	MK-1295-06			PTFE			0.009
Set of spare parts	MK-DDC-S-T5-11	-	10	aluminium	-	-	-
	MK-DDC-S-T5-22		16	brass			
	MK-DDC-S-T5-44		25	AISI 316			

### Hose unit - size 4" (Ø 164)




picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DDC-S516B1101B	4" BSP	10	aluminium	FPM FKM	PUR	-
	MK-DDC-S516B2201B	4" BSP	16	bronze			
	MK-DDC-S516B4401A	4" BSP	25	AISI 316		PTFE	
	MK-DDC-S539B1101	DN100 PN10/16	10	aluminium	FPM FKM	-	-
	MK-DDC-S563B1101	4" ASA 150					
	MK-DDC-S568B1101	TTMA 4"					
	MK-DDC-S539B2201	DN100 PN10/16	16	bronze			
	MK-DDC-S540B2201	DN100 PN25/40					
	MK-DDC-S563B2201	4" ASA 150					
	MK-DDC-S564B2201	4" ASA 300					
	MK-DDC-S568B2201	TTMA 4"					
	MK-DDC-S539B4401	DN100 PN10/16	25	AISI 316			
	MK-DDC-S540B4401	DN100 PN25/40					
	MK-DDC-S563B4401	4" ASA 150					
	MK-DDC-S564B4401	4" ASA 300					
MK-DDC-S568B4401	TTMA 4"						
	MK-DDC-P500B2201	-	-	composite	FPM FKM	-	-
	MK-DDC-P500B1101			aluminium			
	MK-DDC-P500B4401			AISI 316			
Repair kit set of O-rings	MK-DDC-O-S5-01	-	-	FPM FKM	-	-	-
Repair kit flat seal	MK-1295-09	4" BSP	-	PUR	-	-	0.010
	MK-1295-06			PTFE			0.009
Set of spare parts	MK-DDC-S-S5-11	-	10	aluminium	-	-	-
	MK-DDC-S-S5-22		16	brass			
	MK-DDC-S-S5-44		25	AISI 316			






# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DDC

### Tank unit - size 6" (Ø 238)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DDC-T6110B1101B	6" BSP	10	aluminium	FPM FKM	PUR	-
	MK-DDC-T6110B4401A	6" BSP	16	AISI 316		PTFE	
	MK-DDC-T645B1101	DN150 PN10/16	10	aluminium	FPM FKM	-	-
	MK-DDC-T6100B1101	6" ASA 150					
	MK-DDC-T645B4401	DN150 PN10/16	16	AISI 316			
	MK-DDC-T6100B4401	6" ASA 150					
	MK-DDC-C600A1101	-	-	aluminium	FPM FKM	-	-
Repair kit set of O-rings	MK-DDC-O-T6-01	-	-	FPM FKM	-	-	-
Repair kit flat seal	MK-1963-09	6" BSP	-	PUR	-	-	0.016
	MK-1963-06			PTFE			
Set of spare parts	MK-DDC-S-T6-11	-	10	aluminium	-	-	-
	MK-DDC-S-T6-44		16	AISI 316			



### Hose unit - size 6" (Ø 238)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DDC-S6110B1101B	6" BSP	10	aluminium	FPM FKM	PUR	-
	MK-DDC-S6110B4401A	6" BSP	16	AISI 316		PTFE	
	MK-DDC-S645B1101	DN150 PN10/16	10	aluminium	FPM FKM	-	-
	MK-DDC-S6100B1101	6" ASA 150					
	MK-DDC-S645B4401	DN150 PN10/16	16	AISI 316			
	MK-DDC-S6100B4401	6" ASA 150					
	MK-DDC-P600A1101	-	-	aluminium	FPM FKM	-	-
Repair kit set of O-rings	MK-DDC-O-S6-01	-	-	FPM FKM	-	-	-
Repair kit flat seal	MK-1963-09	6" BSP	-	PUR	-	-	0.016
	MK-1963-06			PTFE			
Set of spare parts	MK-DDC-S-S6-11	-	10	aluminium	-	-	-
	MK-DDC-S-S6-44		16	AISI 316			



# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DDC

### Tank unit - size 8" (Ø 272)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DDC-T8102A1101	DN200 PN10	10	aluminium	FPM FKM	-	-
	MK-DDC-T8103A1101	DN200 PN16					
	MK-DDC-T8105A1101	8" ASA 150					
	MK-DDC-T8102A4401	DN200 PN10	16	AISI 316			
	MK-DDC-T8103A4401	DN200 PN16					
	MK-DDC-T8105A4401	8" ASA 150					
	MK-DDC-C800A1101	-	-	aluminium	FPM FKM	-	-
Repair kit set of O-rings	MK-DDC-O-T8-01	-	-	FPM FKM	-	-	-
Set of spare parts	MK-DDC-S-T8-11	-	10	aluminium	-	-	-
	MK-DDC-S-T8-44		16	AISI 316			

### Hose unit - size 8" (Ø 272)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DDC-S8102A1101	DN200 PN10	10	aluminium	FPM FKM	-	-
	MK-DDC-S8103A1101	DN200 PN16					
	MK-DDC-S8105A1101	8" ASA 150					
	MK-DDC-S8102A4401	DN200 PN10	16	AISI 316			
	MK-DDC-S8103A4401	DN200 PN16					
	MK-DDC-S8105A4401	8" ASA 150					
	MK-DDC-P800A1101	-	-	aluminium	FPM FKM	-	-
Repair kit set of O-rings	MK-DDC-O-S8-01	-	-	FPM FKM	-	-	-
Set of spare parts	MK-DDC-S-S8-11	-	10	aluminium	-	-	-
	MK-DDC-S-S8-44		16	AISI 316			

# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DGC



**Material:** AISI 316  
(bronze / brass version available)

**Seals:** O-ring: FPM (Viton), NBR  
Flat seal: PTFE  
(other materials on request)

**Connections:** BSP, NPT thread; DIN, ASA flanges  
(ACME, Whitworth thread available).

**Working temp.:** From -20°C up to +80°C

The acceptable working temperature ranges from -50°C up to +200°C, but as it depends on the medium, confirm the working temperature of each application with Technical Department of TUBES INTERNATIONAL®.

### Operation

A hose unit (coupler) and a tank unit (adapter) of DGC type (Dry Gas Coupling) are both equipped with piston valves which can be opened only after the coupling is connected and closed before it is disconnected. It prevents spillage. The head of the hose unit is rotary (360°). To allow medium flow both units must be coupled by rotating the head of the hose unit about 100° clockwise. During rotation the coupling locks, the valve of the hose unit slides towards the tank unit and the medium starts to flow. To stop the flow, turn the head of the hose unit anticlockwise so the valves close and the coupling disconnects.

### Application

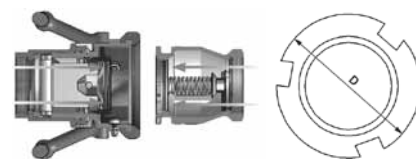
Dry disconnect couplings of DGC type (Dry Gas Couplings) are designed for gas transfer, LPG in particular. They are widely used in road, rail, water and air transport, in petrochemical, chemical and pharmaceutical industry. They meet all requirements for safe, reliable and environment friendly transfer of hazardous, toxic or valuable fluids.

### Standards

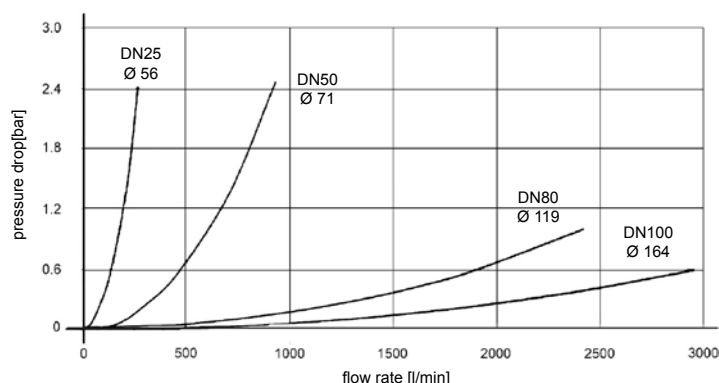
Meet the requirements of ATEX, TDT, ADR, RID, IMDG, Pressure Equipment Directive 97/23/EC (PED).

### Flow rate, maximum spillage at disconnection

size [inch]	1	2	3	4
DN [mm]	25	50	80	100
plug diameter [mm]	56	71	119	164
max. spillage [ml]	0.2	0.3	0.7	1.6



### Pressure drop vs. flow rate






### Test parameters:

Medium: n-paraffin  
Temperature: +20°C  
Density: 0.75 kg/dm<sup>3</sup>  
Viscosity: 1.75 mm<sup>2</sup>/s  
Stanag 3756. annex E




# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DGC

### Tank unit - size 1" (Ø 56)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DGC-L101A4401A	3/4" BSP	25	AISI 316	FPM FKM	PTFE	0.70
	MK-DGC-L102A4401	3/4" NPT				-	0.80
	MK-DGC-L103A4401A	1" BSP				PTFE	0.70
	MK-DGC-L104A4401	1" NPT				-	0.80
	MK-DGC-L105A4401A	1.1/4" BSP				PTFE	0.70
	MK-DGC-L106A4401	1.1/4" NPT				-	0.80
	MK-DGC-L150A4401	3/4" ASA 300	25	AISI 316	FPM FKM	-	1.30
	MK-DGC-L124A4401	DN25 PN25/40					1.40
	MK-DGC-L152A4401	1" ASA 300					1.50
	MK-DGC-L126A4401	DN32 PN25/40					
	MK-DGC-L154A4401	1.1/4" ASA 300					
	MK-DGC-CG100A2201	-	-	composite	FPM FKM	-	-
Repair kit set of O-rings	MK-DGC-O-L1-01	-	-	FPM FKM	-	-	-
Repair kit flat seal	MK-1498-06	3/4"	-	PTFE	-	-	0.001
	MK-1220-06	1"					0.002
Set of spare parts	MK-DGC-S-L1-44	-	25	AISI 316	-	-	-




### Hose unit - size 1" (Ø 56)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DGC-M101A4401A	3/4" BSP	25	AISI 316	FPM FKM	PTFE	0.70
	MK-DGC-M102A4401	3/4" NPT				-	0.80
	MK-DGC-M103A4401A	1" BSP				PTFE	0.70
	MK-DGC-M104A4401	1" NPT				-	0.80
	MK-DGC-M105A4401A	1.1/4" BSP				PTFE	0.70
	MK-DGC-M106A4401	1.1/4" NPT				-	0.80
	MK-DGC-M150A4401	3/4" ASA 300	25	AISI 316	FPM FKM	-	-
	MK-DGC-M124A4401	DN25 PN25/40					-
	MK-DGC-M152A4401	1" ASA 300					-
	MK-DGC-M126A4401	DN32 PN25/40					-
	MK-DGC-M154A4401	1.1/4" ASA 300					-
	MK-DGC-V100A2201	-	-	composite	FPM FKM	-	-
Repair kit set of O-rings	MK-DGC-O-M1-01	-	-	FPM FKM	-	-	-
Repair kit flat seal	MK-1498-06	3/4"	-	PTFE	-	-	0.001
	MK-1220-06	1"					0.002
Set of spare parts	MK-DGC-S-M1-44	-	25	AISI 316	-	-	-




# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DGC

### Tank unit - size 2" (Ø 71)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DGC-L207A4401A	1.1/2" BSP	25	AISI 316	FPM FKM	PTFE	1.50
	MK-DGC-L208A4401	1.1/2" NPT				-	1.60
	MK-DGC-L210A4401A	2" BSP				PTFE	1.20
	MK-DGC-L211A4401	2" NPT				-	1.30
	MK-DGC-L228A4401	DN40 PN25/40	25	AISI 316	FPM FKM	-	2.80
	MK-DGC-L256A4401	1.1/2" ASA 300					3.20
	MK-DGC-L231A4401	DN50 PN25/40					3.50
	MK-DGC-L258A4401	2" ASA 300					
	MK-DGC-C200D1300	-	-	PVC NBR	-	-	-
Repair kit set of O-rings	MK-DGC-O-L2-01	-	-	FPM FKM	-	-	-
Repair kit flat seal	MK-1196-06	1.1/2	-	PTFE	-	-	0.003
	MK-1052-06	2					0.004
Set of spare parts	MK-DGC-S-L2-44	-	25	AISI 316	-	-	-




### Hose unit - size 2" (Ø 71)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DGC-M207A4401A	1.1/2" BSP	25	AISI 316	FPM FKM	PTFE	3.10
	MK-DGC-M208A4401	1.1/2" NPT				-	3.20
	MK-DGC-M210A4401A	2" BSP				PTFE	2.90
	MK-DGC-M211A4401	2" NPT				-	3.00
	MK-DGC-M228A4401	DN40 PN25/40	25	AISI 316	FPM FKM	-	5.30
	MK-DGC-M256A4401	1.1/2" ASA 300					5.70
	MK-DGC-M231A4401	DN50 PN25/40					-
	MK-DGC-M258A4401	2" ASA 300					6.10
	MK-DGC-V200A2201	-	-	composite	FPM FKM	-	-
Repair kit set of O-rings	MK-DGC-O-M2-01	-	-	FPM FKM	-	-	-
Repair kit flat seal	MK-1196-06	1.1/2	-	PTFE	-	-	0.003
	MK-1052-06	2					0.004
Set of spare parts	MK-DGC-S-M2-44	-	25	AISI 316	-	-	-




# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DGC

### Tank unit - size 3" (Ø 119)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DGC-L414B4401A	3" BSP	25	AISI 316	FPM FKM	PTFE	3.00
	MK-DGC-L415B4401	3" NPT				-	
	MK-DGC-L434B4401	DN65 PN25/40	25	AISI 316	FPM FKM	-	5.00
	MK-DGC-L460B4401	2.1/2" ASA 300					
	MK-DGC-L437B4401	DN80 PN25/40					5.50
	MK-DGC-L462B4401	3" ASA 300					
	MK-DGC-C400E2202	-	-	composite	NBR	-	-
Repair kit set of O-rings	MK-DGC-O-L4-01	-	-	FPM FKM	-	-	-
Repair kit flat seal	MK-1110-06	3"	-	PTFE	-	-	0.006
Set of spare parts	MK-DGC-S-L4-44	-	25	AISI 316	-	-	-




### Hose unit- size 3" (Ø 119)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DGC-M412B4401A	2.1/2" BSP	25	AISI 316	FPM FKM	PTFE	8.80
	MK-DGC-M413B4401	2.1/2" NPT				-	9.10
	MK-DGC-M414B4401A	3" BSP				PTFE	8.10
	MK-DGC-M415B4401	3" NPT				-	8.40
	MK-DGC-M434B4401	DN65 PN25/40	25	AISI 316	FPM FKM	-	12.60
	MK-DGC-M460B4401	2 1/2" ASA 300					13.30
	MK-DGC-M437B4401	DN80 PN25/40					13.20
	MK-DGC-M462B4401	3" ASA 300					15.10
	MK-DGC-V400A2201	-	-	composite	FPM FKM	-	-
Repair kit set of O-rings	MK-DGC-O-M4-01	-	-	FPM FKM	-	-	-
Repair kit flat seal	MK-1181-06	2.1/2"	-	PTFE	-	-	0.006
	MK-1110-06	3					0.007
Set of spare parts	MK-DGC-S-M4-44	-	25	AISI 316	-	-	-




# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DGC

### Tank unit - size 4" (Ø 164)

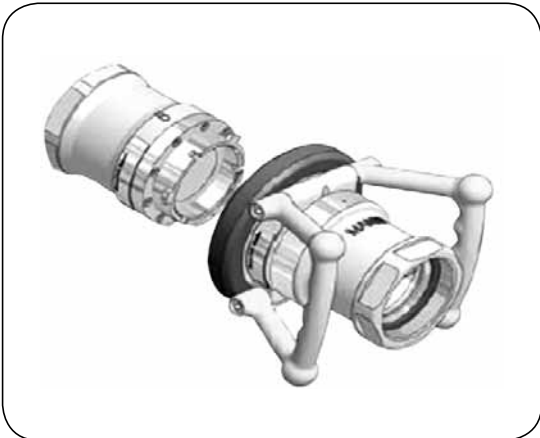
picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DGC-L516B4401A	4" BSP	25	AISI 316	FPM FKM	PTFE	6.10
	MK-DGC-L517B4401	4" NPT				-	6.30
	MK-DGC-L540B4401	DN100 PN25/40	25	AISI 316	FPM FKM	-	9.30
	MK-DGC-L564B4401	4" ASA 300					
	MK-DGC-C500E2202	-	-	composite	NBR	-	-
Repair kit set of O-rings	MK-DGC-O-L5-01	-	-	FPM FKM	-	-	-
Repair kit flat seal	MK-1295-06	4"	-	PTFE	-	-	0.009
Set of spare parts	MK-DGC-S-L5-44	-	25	AISI 316	-	-	-

### Hose unit - size 4" (Ø 164)

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DGC-M516B4401A	4" BSP	25	AISI 316	FPM FKM	PTFE	15.70
	MK-DGC-M517B4401	4" NPT				-	16.00
	MK-DGC-M540B4401	DN100 PN25/40	25	AISI 316	FPM FKM	-	20.80
	MK-DGC-M564B4401	4" ASA 300					24.30
	MK-DGC-P500B2201	-	-	composite	FPM FKM	-	-
Repair kit set of O-rings	MK-DGC-O-M5-01	-	-	FPM FKM	-	-	-
Repair kit flat seal	MK-1295-06	4"	-	PTFE	-	-	0.009
Set of spare parts	MK-DGC-S-M5-44	-	25	AISI 316	-	-	-

# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DAC



**Material:** Aluminium (AISI 316 version available).  
**Seals:** O-ring: FPM (Viton), NBR, for low working temperature, FQM  
Flat seal: PTFE.  
(other materials on request)  
**Connections:** BSP, NPT thread,  
DIN, ASA, TW and TTMA flanges.  
**Working temp.:** From -20°C up to +60°C

A wider working temperature range is acceptable, but as it depends on the medium, confirm the working temperature of each application with Technical Department of TUBES INTERNATIONAL®.

### Operation

A hose unit (coupler) and a tank unit (adapter) of DAC type (Dry Aviation Coupling) are both equipped with piston valves which can be opened only after the coupling is connected and closed before it is disconnected. It prevents spillage. The head of the hose unit is rotary (360°). To allow fluid flow both units must be coupled by rotating the head of the hose unit about 100° clockwise. During rotation the coupling locks, the valve of the hose unit slides towards the tank unit and the medium starts to flow. To stop fluid flow, turn the head of the hose unit anticlockwise so the valves close and the coupling disconnects.

### Application

DAC couplings are designed for jet fuel transfer. They are widely used in road and air transport. They meet all requirements for safe, reliable and environment friendly transfer of hazardous, toxic or valuable products. Not suitable for underwing refuelling. It can be mounted on a flexible hose assembly on the side of a tank truck or storage container.

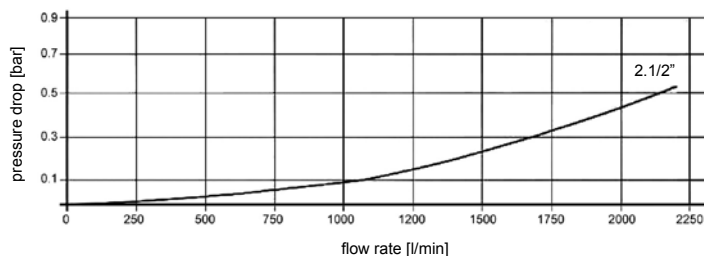
### Standards

Meet the requirements of ATEX, ADR, TDT, Pressure Equipment Directive 97/23/EC (PED). Compatible with aviation couplings according to NATO STANAG 3105. Manufactured according to ISO 45, MS24484, British Aerospace Spec. 2C14.

### Spillage

Once DAC 2.1/2" coupling is disconnected, the spillage amounts to 1.1 ml.

### Pressure drop vs. flow rate



Test parameters:




Medium: n-paraffin  
Temperature: +20°C  
Density: 0.75 kg/dm<sup>3</sup>  
Viscosity: 1.75 mm<sup>2</sup>/s  
Stanag 3756. annex E






# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DAC

### Tank unit- size 2.1/2"

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DAC-G312A1401B	2.1/2" BSP	10	aluminium	FPM FKM	PUR	2.30
	MK-DAC-G314A1401B	3" BSP					
	MK-DAC-G313A1401	2.1/2" NPT				-	
	MK-DAC-G315A1401	3" NPT					
	MK-DAC-G333D1401	DN65 PN10/16	10	aluminium	FPM FKM	-	2.80
	MK-DAC-G336D1401	DN80 PN10/16					3.00
	MK-DAC-G359D1401	2.1/2" ASA 150					2.70
	MK-DAC-G361D1401	3" ASA 150					2.90
	MK-DAC-G367D1401	3" TTMA					2.40
	MK-DAC-G368D1401	4" TTMA					2.60
	MK-DAC-G365D1401	TW 1 (DIN 28459)					2.50
	MK-DAC-G366D1401	TW 3 (DIN 28459)					2.90
	MK-DAC-K300A1101	-	-	aluminium	FPM FKM	-	0.50
	MK-DAC-K300A2201			composite			0.20
Repair kit set of O-rings	MK-DAC-O-G3-01	-	-	FPM FKM	-	-	-
Repair kit flat seal	MK-1181-09	2.1/2" BSP	-	-	PUR		0.005
Set of spare parts	MK-DAC-S-G3-14	2.1/2"	10	aluminium	-	-	-

### Hose unit - size 2.1/2"

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	MK-DAC-F312B1101B	2.1/2" BSP	10	aluminium	FPM FKM	PUR	3.40
	MK-DAC-F314B1101B	3" BSP					3.50
	MK-DAC-F313B1101	2.1/2" NPT				-	3.40
	MK-DAC-F315B1101	3" NPT					3.50
	MK-DAC-F333B1101	DN65 PN10/16	10	aluminium	FPM FKM	-	
	MK-DAC-F336B1101	DN80 PN10/16					
	MK-DAC-F359B1101	2.1/2" ASA 150					
	MK-DAC-F361B1101	3" ASA 150					
	MK-DAC-F367B1101	3" TTMA					
	MK-DAC-F368B1101	4" TTMA					
	MK-DAC-F365B1101	TW 1 (DIN 28459)					
	MK-DAC-F366B1101	TW 3 (DIN 28459)					
	MK-DAC-I300A1101	-	-	aluminium	FPM FKM	-	0.40
	MK-DAC-I300A2201			composite			0.20
Repair kit set of O-rings	MK-DAC-O-F3-01	-	-	FPM FKM	-	-	-
Repair kit flat seal	MK-1181-09	2.1/2" BSP	-	-	PUR	-	0.005
Set of spare parts	MK-DAC-S-F3-11	2.1/2"	10	aluminium	-	-	-

# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DRY-DIS TR



<b>Material:</b>	SS (AISI 316 / AISI 316Ti) Ms - brass, PP - polypropylene (handwheel, blank plug/cap)
<b>Seals:</b>	Viton - valves
<b>Connections:</b>	BSP female thread
<b>Seal:</b>	PTFE for SS couplings PUR for Ms couplings
<b>Working press.:</b>	Up to 25 bar
<b>Max. conn. press.:</b>	6 bar
<b>Working temp.:</b>	From 0°C up to +150°C (Ms up to +60°C)

### Operation

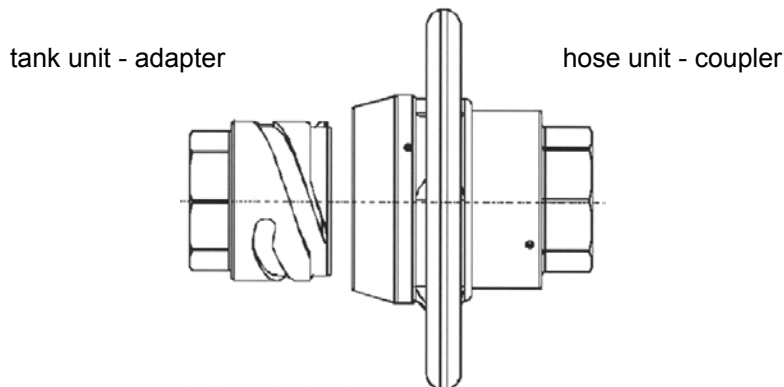
A hose unit (coupler) and a tank unit (adapter) of DRY-DIS TR coupling are both equipped with piston valves which can be opened only after the coupling is connected and closed before it is disconnected. It prevents spillage. The head of the hose unit, sizes DN40 upwards, with polypropylene handwheel facilitates connection. The coupling is connected by sliding the hose unit over the tank unit and turning the handwheel by 10° clockwise. To allow fluid flow both units must be secured by further rotation up to 120° clockwise. To stop fluid flow, turn the head of the hose unit anticlockwise so the valves close and the coupling disconnects. A coded version of the coupling is also available. It prevents connecting the hose unit to the wrong tank unit, conveying other fluid.

### Application

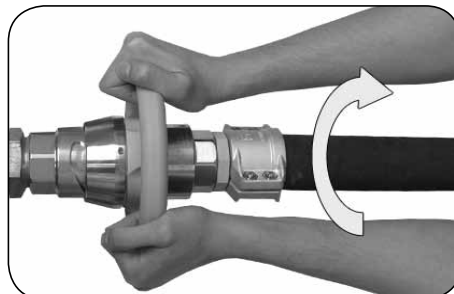
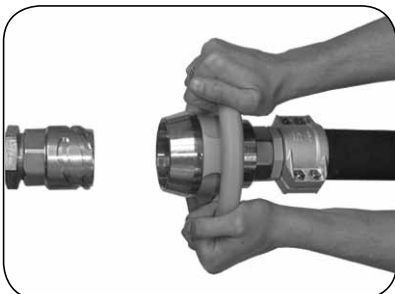
They are widely used in chemical, pharmaceutical, petrochemical, food industry and in reloading applications. They meet all requirements for safe, reliable and environment friendly transfer of hazardous, toxic or valuable fluids and gases. They come in a wide range of sizes (DN25, 32, 40, 50, 65, 80 and 100 mm).

### Standards

Manufactured according to the standards of the producer (Roman Seliger, Germany). Compliant with the Pressure Equipment Directive (CE marking) and the ATEX Directive for operation in potentially explosive atmospheres.

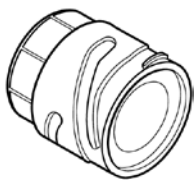
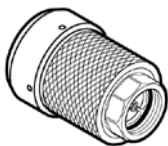


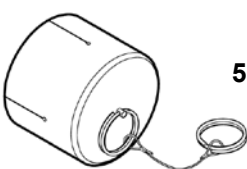


### To connect:



# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DRY-DIS TR

picture	code	size		material	weight [kg]	pic.
		DN	thread			
 <b>1</b> <b>TRV</b> tank unit - adapter	RS-558025100120	25	1" BSP	SS	0.28	1
	RS-558025100130			Ms	0.30	1
	RS-558032125120	32	1.1/4" BSP	SS	0.50	1
	RS-558032125130			Ms	0.53	1
	RS-558040150120	40	1.1/2" BSP	SS	0.75	1
	RS-558040150130			Ms	0.79	1
	RS-558050200120	50	2" BSP	SS	1.20	1
	RS-558050200130			Ms	1.28	1
	RS-558065250120	65	2.1/2" BSP	SS	1.70	1
	RS-558065250130			Ms	1.82	1
 <b>2</b> <b>TRM</b> hose unit - coupler	RS-558080300120	80	3" BSP	SS	3.20	1
	RS-558080300130			Ms	3.45	1
	RS-558100400120	100	4" BSP	SS	5.10	1
	RS-558100400130			Ms	5.45	1
	RS-561025100120	25	1" BSP	SS	0.85	2
	RS-561025100130			Ms	0.91	2
	RS-561032125120	32	1.1/4" BSP	SS	1.50	2
	RS-561032125130			Ms	1.62	2
	RS-561040150120	40	1.1/2" BSP	SS	2.00	3
	RS-561040150130			Ms	2.15	3
 <b>3</b> <b>TRM</b> hose unit - coupler	RS-561050200120	50	2" BSP	SS	3.90	3
	RS-561050200130			Ms	4.20	3
	RS-561065250120	65	2.1/2" BSP	SS	5.10	3
	RS-561065250130			Ms	5.50	3
	RS-561080300120	80	3" BSP	SS	6.20	3
	RS-561080300130			Ms	6.70	3
	RS-561100400120	100	4" BSP	SS	11.50	3
	RS-561100400130			Ms	12.35	3
	RS-564025000500	25		PP	0.03	4
	RS-564032000500	32		PP	0.05	4
 <b>4</b> <b>TRS</b> hose unit blank plug	RS-564040000500	40		PP	0.07	4
	RS-564050000500	50		PP	0.11	4
	RS-564065000500	65		PP	0.14	4
	RS-564080000500	80		PP	0.22	4
	RS-564100000500	100		PP	0.32	4
	RS-567025000500	25		PP	0.05	5
	RS-567032000500	32		PP	0.07	5
	RS-567040000500	40		PP	0.10	5
	RS-567050000500	50		PP	0.14	5
	RS-567065000500	65		PP	0.21	5
 <b>5</b> <b>TRK</b> tank unit blank cap	RS-567080000500	80		PP	0.28	5
	RS-567100000500	100		PP	0.50	5

# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DRY-LINK



**Material:** AISI 316  
**Seal:** PTFE, Viton, EPDM, Chemraz  
**Connections:** BSP or NPTF female thread  
**Working press.:** 14.3 bar - for 1" and 1.1/2"  
                           10.3 bar - for 2"  
                           8.3 bar - for 3"  
**Vacuum:** Up to 0.95 bar  
**Working temp.:** From -30°C up to +110°C (Viton, EPDM, Chemraz)  
                           From -7°C up to +110°C (PTFE)

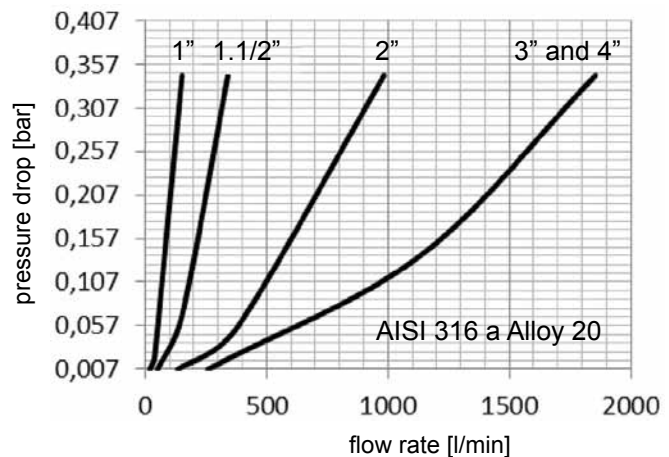
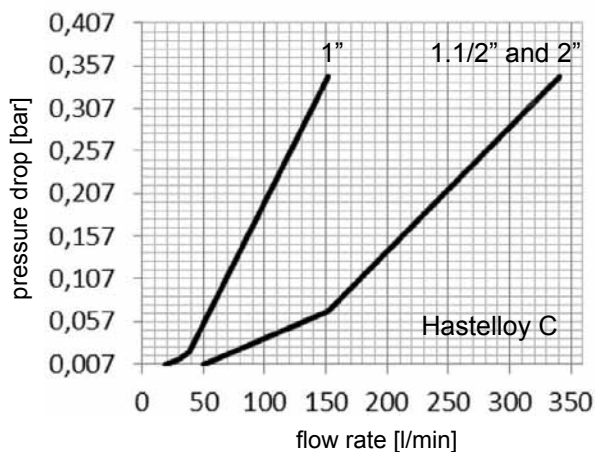
### Operation

A coupler (hose unit) and an adapter (tank unit) of DRY-LINK coupling are both equipped with butterfly valves. The units connect when the coupler slides over the adapter and locking arm is pushed down. To allow fluid flow the locking arm must be secured by turning the handle of the valve by 90°. Advantages of the coupling: light weight, very little pressure drop and easy operation. Mechanical interlock (locking arm) prevents accidental opening.

### Application

DRY LINK couplings are designed for safe and spill free connection within installation (spillage is too small to be measured). Widely used in petrochemical, pharmaceutical and food industry. They meet the most demanding requirements for safe handling and environment protection. Perfectly suited for high viscosity fluids. Available with ASA flanges, TRICLOVER or weld-in fittings, as a polished hygienic version or made of Alloy 20 or Hastelloy C for highly corrosive applications.

### Pressure drop vs. flow rate

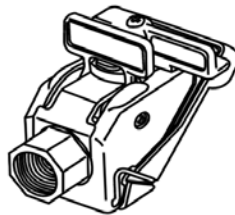
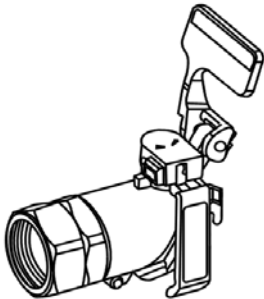

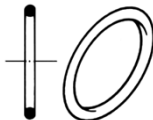


### To connect:



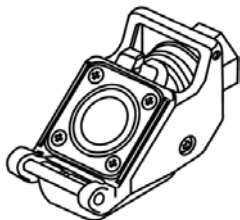
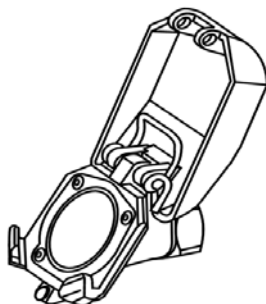

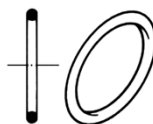
# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DRY-LINK

picture	code	connection	working press. [bar]	material	seal	weight [kg]		
	AC-DLF-100-T-BSP	1" BSP female	14.3	AISI 316	PTFE	0.90		
	AC-DLF-100-T-NPT	1" NPT female				1.50		
	AC-DLF-150-T-BSP	1.1/2" BSP female			Viton	0.90		
	AC-DLF-150-T-NPT	1.1/2" NPT female				1.50		
	AC-DLF-100-V-BSP	1" BSP female			EPDM	0.90		
	AC-DLF-100-V-NPT	1" NPT female				1.50		
	AC-DLF-150-V-BSP	1.1/2" BSP female			Chemraz	0.90		
	AC-DLF-150-V-NPT	1.1/2" NPT female				1.50		
	AC-DLF-100-E-BSP	1" BSP female			Chemraz	0.90		
	AC-DLF-100-E-NPT	1" NPT female				1.50		
	AC-DLF-150-E-BSP	1.1/2" BSP female			Chemraz	0.90		
	AC-DLF-150-E-NPT	1.1/2" NPT female				1.50		
	AC-DLF-100-C-BSP	1" BSP female			Chemraz	0.90		
	AC-DLF-100-C-NPT	1" NPT female				1.50		
	AC-DLF-150-C-BSP	1.1/2" BSP female			Chemraz	0.90		
	AC-DLF-150-C-NPT	1.1/2" NPT female				1.50		
	AC-DLF-200-T-BSP	2" BSP female	10.3	AISI 316	PTFE	2.30		
	AC-DLF-200-T-NPT	2" NPT female			Viton			
	AC-DLF-200-V-BSP	2" BSP female			EPDM			
	AC-DLF-200-V-NPT	2" NPT female			Chemraz			
	AC-DLF-200-E-BSP	2" BSP female			8.3	PTFE	6.40	
	AC-DLF-200-E-NPT	2" NPT female				Viton		
	AC-DLF-200-C-BSP	2" BSP female				EPDM		
	AC-DLF-200-C-NPT	2" NPT female				Chemraz		
	AC-DLF-300-T-BSP	3" BSP female	8.3		PTFE	6.40		
	AC-DLF-300-T-NPT	3" NPT female			Viton			
	AC-DLF-300-V-BSP	3" BSP female			EPDM			
	AC-DLF-300-V-NPT	3" NPT female			Chemraz			
	AC-DLF-300-E-BSP	3" BSP female			8.3	PTFE	7.70	
	AC-DLF-300-E-NPT	3" NPT female				Viton		
	AC-DLF-300-C-BSP	3" BSP female				EPDM		
	AC-DLF-300-C-NPT	3" NPT female				Chemraz		
	AC-DLF-400-T-BSP	4" BSP female			8.3	PTFE	7.70	
	AC-DLF-400-T-NPT	4" NPT female				Viton		
	AC-DLF-400-V-BSP	4" BSP female				EPDM		
	AC-DLF-400-V-NPT	4" NPT female				Chemraz		
	AC-DLF-400-E-BSP	4" BSP female				8.3	PTFE	7.70
	AC-DLF-400-E-NPT	4" NPT female					Viton	
	AC-DLF-400-C-BSP	4" BSP female					EPDM	
	AC-DLF-400-C-NPT	4" NPT female					Chemraz	
		AC-DL-K010250131	1"		-	PTFE	-	-
		AC-DL-K015250131	1.1/2"					
		AC-DL-K020250131	2"					
		AC-DL-K030250131	3"			Viton		
AC-DL-K020250201		2"						
AC-DL-K030250201		3"						
AC-DL-K010250A3B		1"	EPDM					
AC-DL-K014250A3B		1.1/2"						
AC-DL-K020250301		2"						
AC-DL-K030250301		3"						
	AC-DL-K010250121	1"	-	Chemraz	-	-		
	AC-DL-K015250121	1.1/2"						
	AC-DL-K020250121	2"		PTFE				
	AC-DL-K030250121	3"		Viton				
	AC-DL-K020250221	2"						
	AC-DL-K030250221	3"						
	AC-DL-K020250321	2"		EPDM				
	AC-DL-K030250321	3"						

# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DRY-LINK

picture	code	connection	working press. [bar]	material	seal	weight [kg]	
	AC-DLM-100-T-BSP	1" BSP female	14.3	AISI 316	PTFE	0.80	
	AC-DLM-100-T-NPT	1" NPT female				1.40	
	AC-DLM-150-T-BSP	1.1/2" BSP female			Viton	0.80	
	AC-DLM-150-T-NPT	1.1/2" NPT female				1.40	
	AC-DLM-100-V-BSP	1" BSP female			EPDM	0.80	
	AC-DLM-100-V-NPT	1" NPT female				1.40	
	AC-DLM-150-V-BSP	1.1/2" BSP female			Chemraz	0.80	
	AC-DLM-150-V-NPT	1.1/2" NPT female				1.40	
	AC-DLM-100-E-BSP	1" BSP female			Chemraz	0.80	
	AC-DLM-100-E-NPT	1" NPT female				1.40	
	AC-DLM-150-E-BSP	1.1/2" BSP female			Chemraz	0.80	
	AC-DLM-150-E-NPT	1.1/2" NPT female				1.40	
	AC-DLM-100-C-BSP	1" BSP female			Chemraz	0.80	
	AC-DLM-100-C-NPT	1" NPT female				1.40	
	AC-DLM-150-C-BSP	1.1/2" BSP female			Chemraz	0.80	
AC-DLM-150-C-NPT	1.1/2" NPT female	1.40					
	AC-DLM-200-T-BSP	2" BSP female	10.3	AISI 316	PTFE	1.40	
	AC-DLM-200-T-NPT	2" NPT female			Viton		
	AC-DLM-200-V-BSP	2" BSP female			EPDM		
	AC-DLM-200-V-NPT	2" NPT female			Chemraz		
	AC-DLM-200-E-BSP	2" BSP female			8.3	PTFE	4.10
	AC-DLM-200-E-NPT	2" NPT female				Viton	
	AC-DLM-200-C-BSP	2" BSP female				EPDM	
	AC-DLM-200-C-NPT	2" NPT female				Chemraz	
	AC-DLM-300-T-BSP	3" BSP female	8.3		PTFE	5.90	
	AC-DLM-300-T-NPT	3" NPT female			Viton		
	AC-DLM-300-V-BSP	3" BSP female			EPDM		
	AC-DLM-300-V-NPT	3" NPT female			Chemraz		
	AC-DLM-300-E-BSP	3" BSP female			8.3	PTFE	5.90
	AC-DLM-300-E-NPT	3" NPT female				Viton	
	AC-DLM-300-C-BSP	3" BSP female				EPDM	
	AC-DLM-300-C-NPT	3" NPT female				Chemraz	
	AC-DLM-400-T-BSP	4" BSP female			8.3	PTFE	5.90
	AC-DLM-400-T-NPT	4" NPT female				Viton	
	AC-DLM-400-V-BSP	4" BSP female				EPDM	
	AC-DLM-400-V-NPT	4" NPT female				Chemraz	
	AC-DLM-400-E-BSP	4" BSP female		8.3		PTFE	5.90
	AC-DLM-400-E-NPT	4" NPT female				Viton	
	AC-DLM-400-C-BSP	4" BSP female				EPDM	
	AC-DLM-400-C-NPT	4" NPT female				Chemraz	
		AC-DL-K010250141	1"	-	PTFE	-	-
		AC-DL-K015250141	1.1/2"				
		AC-DL-K020250141	2"		Viton		
		AC-DL-K030250141	3"				
AC-DL-K020250201		2"	EPDM				
AC-DL-K030250201		3"					
AC-DL-K010260B3B		1"	EPDM				
AC-DL-K014260B3B		1.1/2"					
AC-DL-K020250301		2"					
AC-DL-K030250301		3"					
	AC-DL-K010250121	1"	-	Chemraz	-	-	
	AC-DL-K015250121	1.1/2"		PTFE			
	AC-DL-K020250121	2"		Viton			
	AC-DL-K030250121	3"		EPDM			
	AC-DL-K020250221	2"					
	AC-DL-K030250221	3"					
	AC-DL-K020250321	2"					
	AC-DL-K030250321	3"					

# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - EPSILON



<b>Coupling:</b>	AISI 316, AISI 316L (Hastelloy C-276 available)
<b>Seal:</b>	TFM (PFA available)
<b>Connections:</b>	BSP or NPT female thread, DIN or ASA flanges, TRICLOVER, weld-in
<b>Working press.:</b>	30 bar
<b>Under pressure:</b>	Full vacuum
<b>Working temp.:</b>	From -30°C up to +120°C (PFA) From -30°C up to +230°C (TFM)
<b>Max. spillage:</b>	0.7 ml (1"), 0.8 ml (2"), 2 ml (3")
<b>Flow factor <math>c_v</math>:</b>	42 (1"), 160 (2"), 240 (3")

### Operation

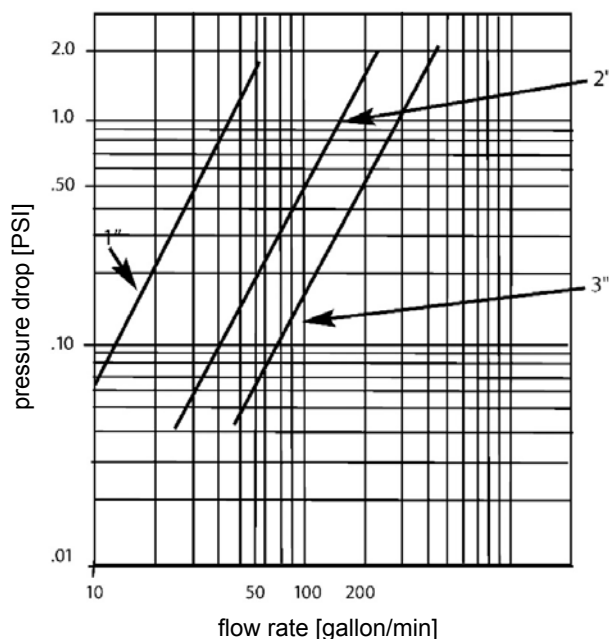
The connection between halves is possible when ramped lug and flange interfaces are aligned, connected with a push, followed by 90° turn. To allow fluid flow the valves of the coupling must be opened in correct order - first the valve of the coupler and the valve of the adapter second (order marked on the handles). The valves cannot be opened when the coupling halves are disconnected. The design of the coupling, a ball valve in each half, provides an unrestricted flow path. EPSILON is a dry disconnect coupling of the highest quality and highest working parameters. The fluid path is made of AISI 316/316L steel or Hastelloy C-276 (a coupling entirely made of Hastelloy C-276 is available). Each U-Cup seal, made of modified PTFE (TFM or PFA) is energized with a Hastelloy C-276 spring to provide initial sealing, including high, low and full vacuum. EPSILON couplings ensure the lowest spillage rates at connection/disconnection and reduced emission of volatile organic compounds - less than 25 ppm at operator exposable distance. Available with polyethylene blank plugs/caps as a standard. Stainless steel pressure dust cups are available on request.

### Application

Widely used in chemical, pharmaceutical, petrochemical industry for industrial processes and reloading of valuable and hazardous media.

### Standards

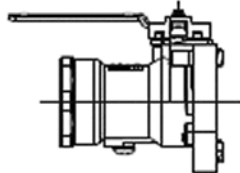
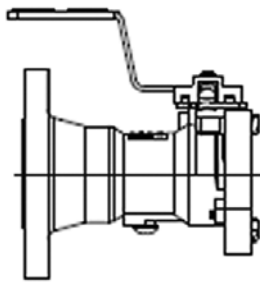
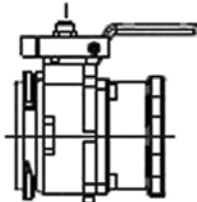
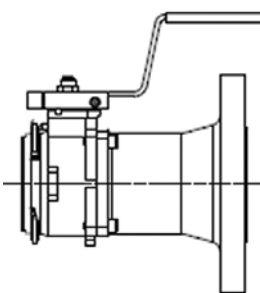
Approved by TSSA (Technical Standards and Safety Authority), AAR (Association of American Railroads), TÜV.



valve size	connection size
1"	3/4", 1", DN20, DN25
2"	1.1/2", 2", DN40, DN50
3"	3", DN80

# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - EPSILON

picture	code	connection	working press. [bar]	material	seal	weight [kg]
<p>Coupler - hose unit</p> 	OW-ZE16HS12A-01101	3/4" NPT female	30	AISI 316	TFM	1.40
	OW-ZE16HS12B-01101	3/4" BSP female				
	OW-ZE16HS16A-01101	1" NPT female				
	OW-ZE16HS16B-01101	1" BSP female				
	OW-ZE32HS24A-01101	1.1/2" NPT female				2.70
	OW-ZE32HS24B-01101	1.1/2" BSP female				
	OW-ZE32HS32A-01101	2" NPT female				
	OW-ZE32HS32B-01101	2" BSP female				
	OW-ZE48HS48A-01101	3" NPT female	25			8.60
	OW-ZE48HS48B-01101	3" BSP female				
<p>Coupler - hose unit</p> 	OW-ZE16HS12J-01101	DN20 PN16	16	AISI 316	TFM	-
	OW-ZE16HS12D-01101	3/4" 150PSI	30			
	OW-ZE16HS12L-01101	DN20 PN40	30			
	OW-ZE16HS16J-01101	DN25 PN16	16			
	OW-ZE16HS16D-01101	1" 150PSI	16			
	OW-ZE16HS16L-01101	DN25 PN40	30			
	OW-ZE32HS24J-01101	DN40 PN16	16			
	OW-ZE32HS24D-01101	1.1/2" 150PSI	30			
	OW-ZE32HS24L-01101	DN40 PN40	30			
	OW-ZE32HS32J-01101	DN50 PN16	16			
	OW-ZE32HS32D-01101	2" 150PSI	16			
	OW-ZE32HS32L-01101	DN50 PN40	30			
	OW-ZE48HS48J-01101	DN80 PN16	16			
	OW-ZE48HS48D-01101	3" 150PSI	16			
	OW-ZE48HS48L-01101	DN80 PN40	25			
<p>Adapter - tank unit</p> 	OW-ZE16AS12A-01101	3/4" NPT female	30	AISI 316	TFM	1.20
	OW-ZE16AS12B-01101	3/4" BSP female				
	OW-ZE16AS16A-01101	1" NPT female				
	OW-ZE16AS16B-01101	1" BSP female				
	OW-ZE32AS24A-01101	1.1/2" NPT female				1.80
	OW-ZE32AS24B-01101	1.1/2" BSP female				
	OW-ZE32AS32A-01101	2" NPT female				
	OW-ZE32AS32B-01101	2" BSP female				
	OW-ZE48AS48A-01101	3" NPT female	25			7.30
	OW-ZE48AS48B-01101	3" BSP female				
<p>Adapter - tank unit</p> 	OW-ZE16AS12J-01101	DN20 PN16	16	AISI 316	TFM	-
	OW-ZE16AS12D-01101	3/4" 150PSI	30			
	OW-ZE16AS12L-01101	DN20 PN40	30			
	OW-ZE16AS16J-01101	DN25 PN16	16			
	OW-ZE16AS16D-01101	1" 150PSI	16			
	OW-ZE16AS16L-01101	DN25 PN40	30			
	OW-ZE32AS24J-01101	DN40 PN16	16			
	OW-ZE32AS24D-01101	1.1/2" 150PSI	30			
	OW-ZE32AS24L-01101	DN40 PN40	30			
	OW-ZE32AS32J-01101	DN50 PN16	16			
	OW-ZE32AS32D-01101	2" 150PSI	16			
	OW-ZE32AS32L-01101	DN50 PN40	30			
	OW-ZE48AS48J-01101	DN80 PN16	16			
	OW-ZE48AS48D-01101	3" 150PSI	16			
	OW-ZE48AS48L-01101	DN80 PN40	25			



# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DRY-MATE SS



**Material:** AISI 316  
**Seal:** PTFE - valve  
 Viton - coupling  
 (EPDM and Kalrez available)  
**Connections:** BSP or NPT female thread  
 (thread seal)  
**Working press.:** Up to 7 bar  
**Working temp.:** Up to +150°C  
**Max. spillage:** 1 ml (1") and 2 ml (1.1/2" and 2")

### Operation

The halves of the coupling connect similar to CAMLOCK coupling - cam levers must be closed. When the valves of the connected coupling are being opened, the locking yoke automatically interlocks the cam levers - prevents disconnection. The adapter must always be assembled on the side where pressure is supplied. The design of the coupling, a ball valve in each half, provides an unrestricted flow path 1.1/2" (38 mm). The valves cannot be opened when the coupling halves are disconnected.

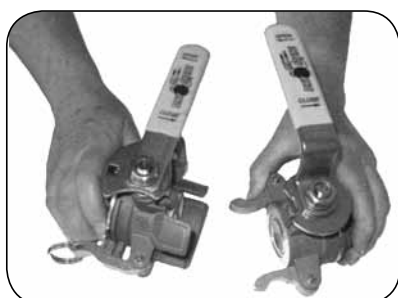
### Application

DRY-MATE SS is a user-friendly coupling designed for safe, virtually spill-free connection within installation. DRY-MATE SS couplings are used in chemical and pharmaceutical industry, in agriculture. Not suitable for gaseous media.

 adapter (tank unit)				 coupler (hose unit)			
code	DN [mm]	thread	weight [kg]	code	DN [mm]	thread	weight [kg]
AC-DMA100-SS-BSP	25	1" BSP	1.00	AC-DMD100-SS-BSP	25	1" BSP	1.15
AC-DMA100-SS-NPT	25	1" NPT	1.00	AC-DMD100-SS-NPT	25	1" NPT	1.15
AC-DMA150-SS-BSP	38	1.1/2" BSP	2.70	AC-DMD150-SS-BSP	38	1.1/2" BSP	3.05
AC-DMA150-SS-NPT	38	1.1/2" NPT	2.70	AC-DMD150-SS-NPT	38	1.1/2" NPT	3.05
AC-DMA200-SS-BSP	38	2" BSP	2.60	AC-DMD200-SS-BSP	38	2" BSP	3.05
AC-DMA200-SS-NPT	38	2" NPT	2.60	AC-DMD200-SS-NPT	38	2" NPT	3.05

Adapters and couplers are supplied with polypropylene blank caps/plugs as a standard.

### To connect:



# INDUSTRIAL FITTINGS - couplings

## Dry disconnect couplings - DRY-MATE PP





<b>Material:</b>	Body - polypropylene reinforced with fibre glass Ball - PTFE CAMLOCK levers - AISI 316
<b>Seal:</b>	PTFE - valve Viton - coupling (EPDM and Kalrez available)
<b>Connections:</b>	BSP or NPT female thread (thread seal)
<b>Working press.:</b>	Up to 7 bar (21°C)
<b>Working temp.:</b>	Up to +66°C (working press. 5 bar)
<b>Max. spillage:</b>	2 ml

### Operation

The halves of the coupling connect similar to CAMLOCK coupling - cam levers must be closed. When the valves of the connected coupling are being opened, the locking yoke automatically interlocks the cam levers - prevents disconnection. The adapter must always be assembled on the side where pressure is supplied. The design of the coupling, a ball valve in each half, provides an unrestricted flow path 1.1/2" (38 mm). The valves cannot be opened when the coupling halves are disconnected.

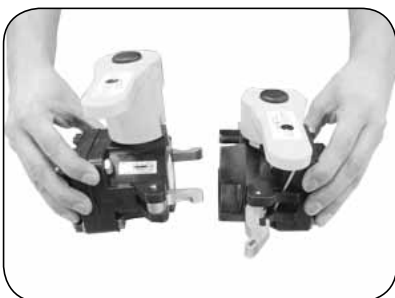
### Application

DRY-MATE PP is a lightweight, user friendly coupling designed for safe, virtually spill free connection within installation. DRY-MATE PP couplings are used in chemical and pharmaceutical industry, in agriculture. Not suitable for gaseous media and fluids with low ignition point.

 <p>adapter (tank unit)</p>				 <p>coupler (hose unit)</p>			
code	DN [mm]	thread	weight [kg]	code	DN [mm]	thread	weight [kg]
AC-DMA150-PP-BSP	38	1.1/2" BSP	1.20	AC-DMD150-PP-BSP	38	1.1/2" BSP	1.20
AC-DMA150-PP-NPT	38	1.1/2" NPT	1.20	AC-DMD150-PP-NPT	38	1.1/2" NPT	1.20
AC-DMA200-PP-BSP	38	2" BSP	1.20	AC-DMD200-PP-BSP	38	2" BSP	1.20
AC-DMA200-PP-NPT	38	2" NPT	1.20	AC-DMD200-PP-NPT	38	2" NPT	1.20

Adapters and couplers are supplied with polypropylene blank caps as a standard.

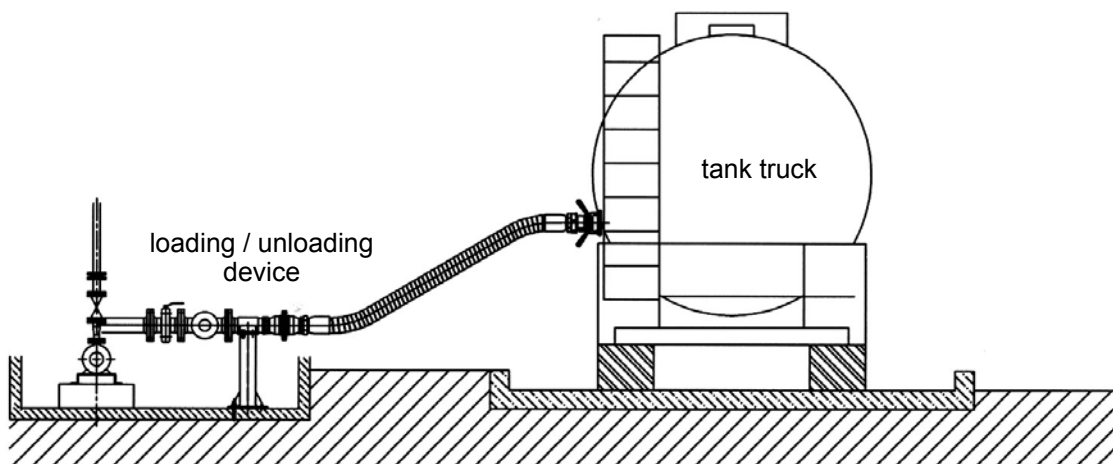
### To connect:



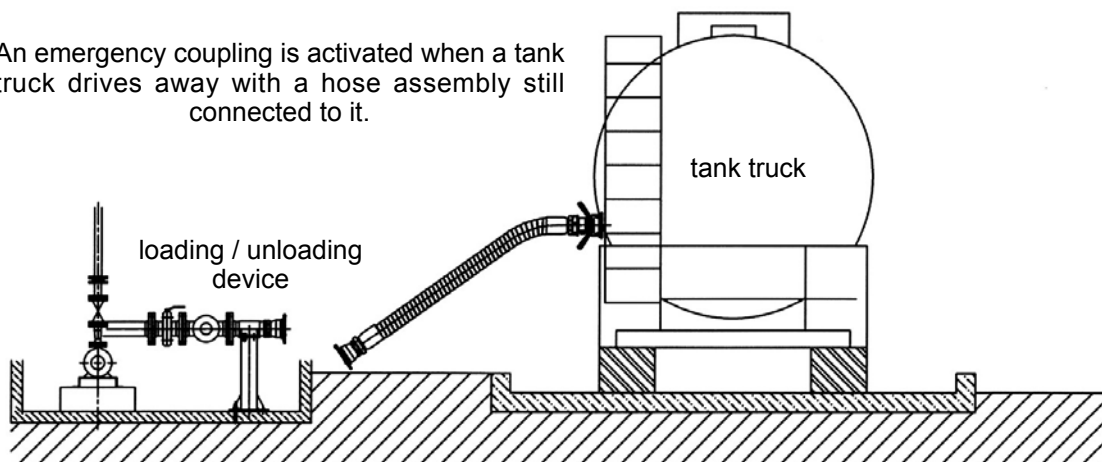
### Emergency couplings - operation and types

An emergency coupling protects against the consequences of accidental, excessive strain of a flexible hose assembly. It is required wherever driveway incidents may occur - a tank truck rolls away though the assembly is still connected. Then, not able to resist the pull force, the hose breaks causing spillage of a hazardous product. There are two basic methods utilized to activate the breakaway couplings - breaking pins or a cable. The coupling with breaking pins is designed to transmit the load of the strained hose to the breaking bolts. The bolts are broken before the hose and its fittings collapse, and the coupling disconnects. Simultaneously spring valves in both coupling halves lock so the transferred medium is not released to the atmosphere. The coupling contains three breaking pins. After emergency situation which caused disconnection of the coupling and breaking of bolts, the coupling can be easily connected using a new set of bolts. However before it is reused, the coupling always requires thorough inspection.

The second type of couplings - a coupling with a cable, activates disconnection when a hose assembly connected to a tank truck is pulled. At the same time the cable fixed to the coupling at one end and at the other to a rigid point on the installation is strained (the cable is shorter than the flexible hose assembly). The coupling disconnects. Simultaneously spring valves in both coupling halves lock so the transferred medium is not discharged to the atmosphere. The coupling has three levers that connect coupling halves. The levers are released when the strain of the cable achieves pre-determined limit. The lateral deflection of the force straining the cable from the coupling axis must not exceed  $90^\circ$ . After emergency situation which caused disconnection of the coupling, the coupling can be connected once again. However before it is reused, the coupling always requires thorough inspection.



An emergency coupling is activated when a tank truck drives away with a hose assembly still connected to it.



# INDUSTRIAL FITTINGS - couplings

## Emergency couplings - SBC



<b>Material:</b>	Aluminium, brass, AISI 316
<b>Seals:</b>	Viton - O-ring PTFE - flat seal of the connection side (other also available)
<b>Connections:</b>	As a standard: BSP or NPT thread, PN EN1092-1, ANSI B16.5 or TTMA flanges (other also available)
<b>Working press.:</b>	25 bar (optionally 40 bar)
<b>Working temp.:</b>	From -25°C up to +80°C (the acceptable working temperature ranges from -54°C up to +250°C for proper coupling material and seals, after written confirmation for application with a particular medium from the manufacturer).

### Operation

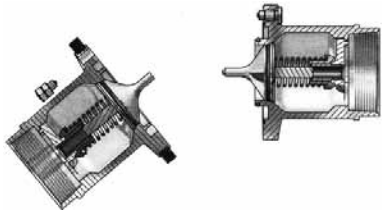
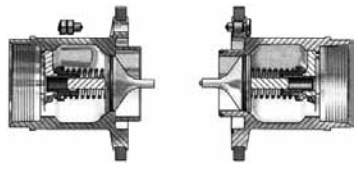
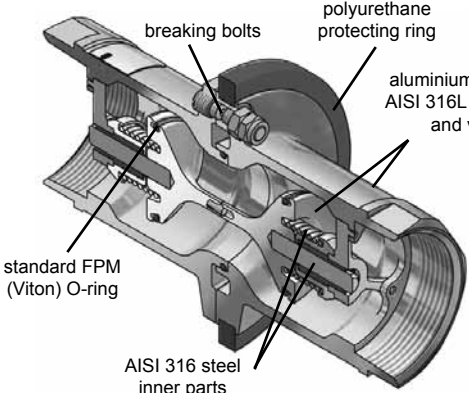
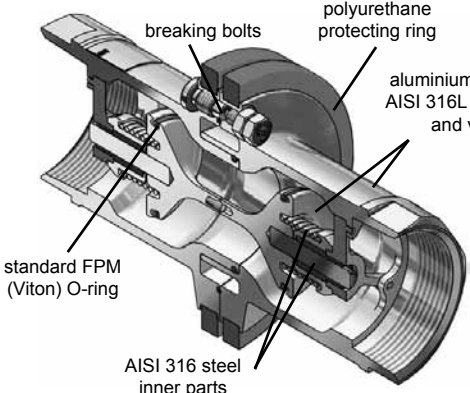
A coupling designed to transmit a load of a strained hose to breaking bolts. The bolts are broken before the hose and its fittings collapse. The coupling disconnects. Simultaneously spring valves in both coupling halves lock, so the transferred medium is not released to the atmosphere. The coupling contains three breaking pins. After emergency situation which caused disconnection of the coupling and breaking of bolts, the coupling can be easily connected using a new set of bolts. However before it is reused, the coupling always requires thorough inspection. The breaking load can be set at a lower level, accordingly, the maximum working pressure is lower as well. The seal made of EPDM, NBR, Chemraz or Kalrez is also available.

### Application

Emergency couplings are used in industrial installations and reloading systems, to handle chemicals, fuels and gases.




### Standards

The couplings meet the requirements of ATEX, ADR, RID, IMDG, Pressure Equipment Directive 97/23/EC (PED).

INDUSTRIAL SBC	MARINE SBC
The couplings disconnect at an angle ranging from 0° to 90°. The coupling is assembled on the installation at one end, and hose assembly at the other.	The coupling is disconnected by a straight (0°) pull only. Any bending of the coupling is not transmitted to the breaking bolts. The coupling is assembled between two hose lengths.
	
	


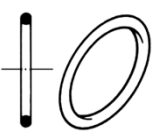
# INDUSTRIAL FITTINGS - couplings

## Emergency couplings - SBC

picture	code	connection	break. force [kN]	work. press. [bar]	material	seal		weight [kg]
						O-ring	thread	
	MK-SBC-N103D1101B	1" BSP female	3.2	16	aluminium	FPM FKM	PUR	-
	MK-SBC-N210D1101B	2" BSP female	9					0.90
	MK-SBC-N312D1101B	2.1/2" BSP female	10					2.50
	MK-SBC-N414D1101B	3" BSP female	15	2.90				
	MK-SBC-N516D1101B	4" BSP female	24	5.30				
	MK-SBC-N6110D1101B	6" BSP female	54	15.90				
	MK-SBC-N103D2201B	1" BSP female	3.2	16	brass			-
	MK-SBC-N210D2201B	2" BSP female	9					
	MK-SBC-N312D2201B	2.1/2" BSP female	16					
	MK-SBC-N414D2201B	3" BSP female	24					
	MK-SBC-N516D2201B	4" BSP female	38					
	MK-SBC-N103D4401A	1" BSP female	4.8	25	AISI 316		PTFE	1.70
	MK-SBC-N210D4401A	2" BSP female	13					2.60
	MK-SBC-N312D4401A	2.1/2" BSP female	22					7.40
	MK-SBC-N414D4401A	3" BSP female	33					8.50
	MK-SBC-N516D4401A	4" BSP female	52					15.50
	MK-SBC-N6110D4401A	6" BSP female	92					46.80
	MK-SBC-N104D1101	1" NPT female	3.2	16	aluminium	FPM FKM		-
	MK-SBC-N211D1101	2" NPT female	9					0.90
	MK-SBC-N313D1101	2.1/2" NPT female	10					2.50
	MK-SBC-N415D1101	3" NPT female	15	2.90				
	MK-SBC-N517D1101	4" NPT female	24	5.30				
	MK-SBC-NV124D1101	5" NPT female	37	12.00				
	MK-SBC-N6111D1101	6" NPT female	54	16	brass			15.90
	MK-SBC-N104D2201	1" NPT female	3.2					-
	MK-SBC-N211D2201	2" NPT female	9					-
	MK-SBC-N313D2201	2.1/2" NPT female	16					-
	MK-SBC-N415D2201	3" NPT female	24					-
	MK-SBC-N517D2201	4" NPT female	38	25	AISI 316			1.70
	MK-SBC-N104D4401	1" NPT female	4.8					2.60
	MK-SBC-N211D4401	2" NPT female	13					7.40
	MK-SBC-N313D4401	2.1/2" NPT female	22					8.50
	MK-SBC-N415D4401	3" NPT female	33					15.50
	MK-SBC-N517D4401	4" NPT female	52					32.00
MK-SBC-NV124D4401	5" NPT female	81				46.80		
MK-SBC-N6111D4401	6" NPT female	92				-		
MK-SBC-N8117D4401	8" NPT female	165				-		
	MK-SBC-N123D1101	DN25 PN10/16	3.2	16	aluminium	FPM FKM		-
	MK-SBC-N230D1101	DN50 PN10/16	9					2.50
	MK-SBC-N333D1101	DN65 PN10/16	10					4.50
	MK-SBC-N436D1101	DN80 PN10/16	15	5.10				
	MK-SBC-N539D1101	DN100 PN10/16	24	7.00				
	MK-SBC-N645D1101	DN150 PN10/16	54	19.60				
	MK-SBC-N123D2201	DN25 PN10/16	3.2	16	brass			-
	MK-SBC-N230D2201	DN50 PN10/16	9					-
	MK-SBC-N333D2201	DN65 PN10/16	16					-
	MK-SBC-N436D2201	DN80 PN10/16	24					-
	MK-SBC-N539D2201	DN100 PN10/16	38					-
	MK-SBC-N123D4401	DN25 PN10/16	4.8	25	AISI 316			4.20
	MK-SBC-N230D4401	DN50 PN10/16	13					7.30
	MK-SBC-N333D4401	DN65 PN10/16	22					13.20
	MK-SBC-N436D4401	DN80 PN10/16	33					15.10
	MK-SBC-N539D4401	DN100 PN10/16	52					20.70
	MK-SBC-N645D4401	DN150 PN10/16	92					57.60
MK-SBC-N8103D4401	DN200 PN16	165	16			71.00		

# INDUSTRIAL FITTINGS - couplings

## Emergency couplings - SBC

picture	code	connection	breaking force [kN]	material
	MK-SBC-S-N1D-44-3.2	1" BSP female	3.2	AISI 316
	MK-SBC-S-N1D-44-4.8	1" BSP female	4.8	
	MK-SBC-S-N2D-44-9.0	2" BSP female	9	
	MK-SBC-S-N2D-44-13.0	2" BSP female	13	
	MK-SBC-S-N3D-44-10.0	2 1/2" BSP female	10	
	MK-SBC-S-N3D-44-16.0	2 1/2" BSP female	16	
	MK-SBC-S-N3D-44-22.0	2 1/2" BSP female	22	
	MK-SBC-S-N4D-44-15.0	3" BSP female	15	
	MK-SBC-S-N4D-44-24.0	3" BSP female	24	
	MK-SBC-S-N4D-44-33.0	3" BSP female	33	
	MK-SBC-S-N5D-44-24.0	4" BSP female	24	
	MK-SBC-S-N5D-44-38.0	4" BSP female	38	
	MK-SBC-S-N5D-44-52.0	4" BSP female	52	
	MK-SBC-S-NVD-44-37.0	5" BSP female	37	
	MK-SBC-S-NVD-44-81.0	5" BSP female	81	
	MK-SBC-S-N6D-44-54.0	6" BSP female	54	
	MK-SBC-S-N6D-44-92.0	6" BSP female	92	
	MK-SBC-S-N8D-44-165.0	8" BSP female	165	
	MK-SBC-O-N1D-01	1" BSP female	-	FPM FKM
	MK-SBC-O-N2D-01	2" BSP female	-	
	MK-SBC-O-N3D-01	2 1/2" BSP female	-	
	MK-SBC-O-N4D-01	3" BSP female	-	
	MK-SBC-O-N5D-01	4" BSP female	-	
	MK-SBC-O-NVD-01	5" BSP female	-	
	MK-SBC-O-N6D-01	6" BSP female	-	
	MK-SBC-O-N8D-013	8" BSP female	-	
Spanner	MK-SBC-TOOL020	1 1/2" - 4"	-	-
Set of spare O-rings	MK-SBC-TOOL001	-	-	-

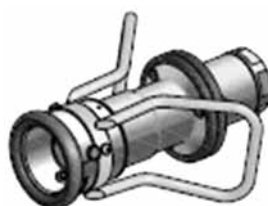
## SBC coupling versions



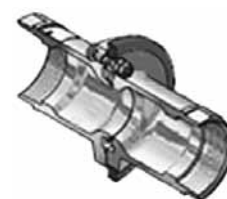
with swivel joint



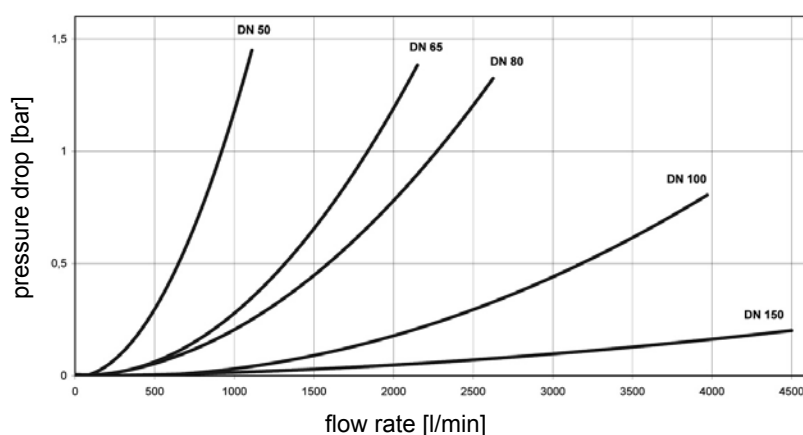
with DDC coupler



with DGC coupler



without valves



Test parameters:

Medium: n-paraffin  
 Temperature: +20°C  
 Density: 0.75 kg/dm<sup>3</sup>  
 Viscosity: 1.75 mm<sup>2</sup>/s

# INDUSTRIAL FITTINGS - couplings

## Emergency couplings - ABV



<b>Material:</b>	SS (AISI 316 / AISI 316Ti), SS/E-CTFE, Al
<b>Seal:</b>	Viton - O-ring PTFE - for SS couplings, PUR - for Al couplings (other also available)
<b>Connections:</b>	BSP female thread
<b>Working press.:</b>	16 bar (10 bar for Al)
<b>Working temp.:</b>	From -40°C up to +150°C (for SS) From -40°C up to +60°C (for Al)

### Operation

A coupling designed to transmit a load of a strained hose to breaking bolts. The bolts are broken before the hose and its fittings collapse. The coupling disconnects. Simultaneously spring valves in both coupling halves lock so the transferred medium is not released to the atmosphere. The coupling contains three breaking pins that ensure even distribution of axial load. If the load is lateral, the coupling disconnects earlier. The lateral deflection of the force straining the hose from the coupling axis must not exceed 90°. After emergency situation which caused disconnection of the coupling and breaking of bolts, the coupling can be easily connected using a new set of bolts. However before it is reused, the coupling always requires meticulous inspection.

### Application

ABV emergency couplings are used in industrial installations and reloading systems, to handle chemicals, fuels and gases.

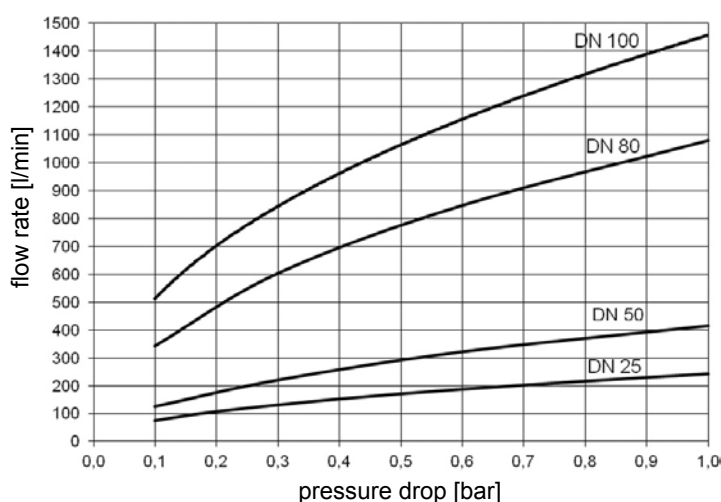
### Standards

Compliant with the Pressure Equipment Directive (CE marking) and the ATEX Directive for operation in potentially explosive atmospheres, zone 1.

### Axial force (P) breaking a coupling without pressure

DN [mm]	25	50	80	100
P [kG]	320	1000	2000	2800

### Pressure drop in ABV and ABV-S couplings



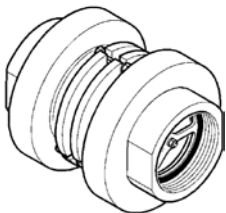
Test parameters:


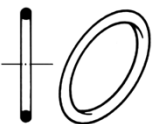

Medium: water  
Temperature: +20°C  
DIN EN 60534-2-3

Resistance of a flexible hose assembly (a hose with fittings) to axial mechanical load must be at least 1.3 times bigger than the force breaking a coupling.

# INDUSTRIAL FITTINGS - couplings

## Emergency couplings - ABV

picture	code	connection	break. force [kN]	work. press. [bar]	material	seal		weight [kg]	
						O-ring	thread		
	RS-555200200141	2" BSP female	10	10	aluminium		PUR	1.20	
	RS-555300300141	3" BSP female	20					3.40	
	RS-555400400141	4" BSP female	28					5.20	
	RS-555100100121	1" BSP female	3.2	16	AISI 316Ti	Viton	PTFE	1.20	
	RS-555200200121	2" BSP female	10		AISI 316			2.40	
	RS-555300300121	3" BSP female	20					5.90	
	RS-555400400121	4" BSP female	28					10.00	
	RS-55520020012174	2" BSP female	10		AISI 316 C4/E-CTFE			2.40	
	RS-55530030012174	3" BSP female	20					5.90	
	RS-55540040012174	4" BSP female	28					10.00	
	RS-55510010012109	1" BSP female	3.2		AISI 316	EPDM		1.20	
	RS-55520020012109	2" BSP female	10					2.40	
	RS-55530030012109	3" BSP female	20					5.90	
	RS-55540040012109	4" BSP female	28					10.00	
	RS-55520020012179	2" BSP female	10					AISI 316 C4/E-CTFE	2.40
	RS-55530030012179	3" BSP female	20						5.90
	RS-55540040012179	4" BSP female	28						9.80

picture	code	connection	breaking force [kN]	material
<div>Breaking pins</div> 	RS-550006025042	1"	3.2	AISI 316
	RS-550006025102	2"	10	
	RS-550006025202	3"	20	
	RS-550008035282	4"	28	
<div>O-ring</div> 	RS-06502300300402	1"	-	Viton
	RS-06501800200402			
	RS-06503900300402	2"		
	RS-06506500400401	3"		
	RS-06508000400401	4"		
	RS-06508500400401			
<div>Flat seal</div> 	RS-010200000102	2"	-	PUR
	RS-010300000102	3"		
	RS-010400000102	4"		
	RS-010100000106	1"		PTFE
	RS-010200000106	2"		
	RS-010300000106	3"		
	RS-010400000106	4"		



# INDUSTRIAL FITTINGS - couplings

## Emergency couplings - ABV-S



**Material:** SS (AISI 316 / AISI 316Ti),  
SS/E-CTFE

**Seal:** Viton - O-ring  
PTFE - for SS couplings  
(other also available)

**Connections:** BSP female thread  
DIN PN10/16 or ASA 150 flanges

**Working press.:** 25 bar

**Working temp.:** From -40°C up to +150°C  
(working temperature depends on seal and coupling material)

### Operation

A coupling with a cable activates disconnection when a hose assembly connected to a tank truck is pulled. At the same time the cable fixed to the coupling at one end and at the other to a rigid point on the installation is strained (the cable is shorter than the flexible hose assembly). The coupling disconnects. Simultaneously spring valves in both coupling halves lock so the transferred medium is not discharged to the atmosphere. The coupling has three levers that connect coupling halves. The levers are released when the strain of the cable achieves pre-determined limit. The lateral deflection of the force straining the cable from the coupling axis must not exceed 90°. After emergency situation which caused disconnection of the coupling, the coupling can be connected once again. However before it is reused, the coupling always requires thorough inspection.

### Application

ABV-S emergency couplings are used in industrial installations and reloading systems, to handle chemicals, fuels and gases. Compared to ABV couplings with breaking bolts, ABV-S couplings are more adjustable so can be activated with little force. Thus they can be used on installations that cannot handle excessive loads. When compared: ABV DN50 coupling activates at 7.8 kN (pressure: 16 bar, angle: 0°), whereas ABV-S DN50 at 0.3 kN (pressure: 25 bar, angle: 0°).

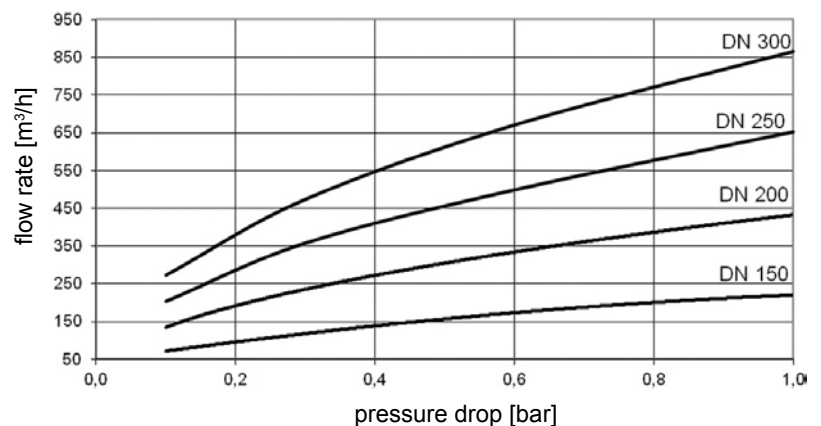
### Standards

Compliant with the Pressure Equipment Directive (CE marking) and the ATEX Directive for operation in potentially explosive atmospheres, zone 1.

**Force (P) that strains a cable and causes coupling disconnection at 25 bar:**

DN [mm]	P [kN]	
	angle 0°	angle 90°
25	0.4	0.5
50	0.3	0.6
80	0.5	0.9
100	1.5	1.8
150	2.4	4.9
200	3	6.3

**Pressure drop in ABVF-S coupling**



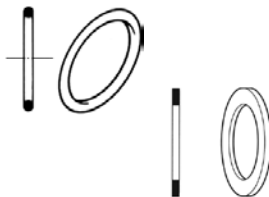
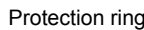


Test parameters:

Medium: water  
Temperature: +20°C  
DIN EN 60534-2-3

# INDUSTRIAL FITTINGS - couplings

## Emergency couplings - ABV-S

picture	code	connection	work. press. [bar]	material	seal		weight [kg]
					O-ring	thread	
	RS-556100100121	1" BSP female	25	AISI 316	Viton	PTFE	1.15
	RS-556200200121	2" BSP female					3.85
	RS-556300300121	3" BSP female					7.95
	RS-556400400121	4" BSP female					14.35
	RS-55620020012174	2" BSP female					3.85
	RS-55630030012174	3" BSP female		C4/E-CTFE	7.95		
	RS-55610010012109	1" BSP female		AISI 316	EPDM		1.15
	RS-55620020012109	2" BSP female					3.85
	RS-55630030012109	3" BSP female					7.95
	RS-55640040012109	4" BSP female					14.35
	RS-55610010012110	1" BSP female			Kalrez 4079	1.15	
	RS-55620020012110	2" BSP female				3.85	
	RS-55630030012110	3" BSP female				7.95	
	RS-55640040012110	4" BSP female				14.35	
	RS-553600600220	DN150 PN10/16	16	AISI 316	Viton	-	37.50
	RS-553600600720	6" ASA 150 PSI	25				41.10
	RS-553600600420	DN150 PN25					41.50
	RS-553600600820	6" ASA 300 PSI					10
	RS-553800800120	DN200 PN10	16				98.40
	RS-553800800220	DN200 PN16					98.40
	RS-553800800720	8" ASA 150 PSI					102.30
Set of flat seals and O-rings 	RS-550200200104	DN50	-	-	Viton	PTFE	-
	RS-550200200105				EPDM		
	RS-550200200106				FEP		
	RS-550300300104	DN80			Viton		
	RS-550300300106				FEP		
	RS-550400400104				Viton		
	RS-550400400106	DN100			FEP		
	RS-550600600004				DN150	Viton	
	RS-550600600006					FEP	
	RS-550800800004	DN200				Viton	
Protection ring 	RS-554050200003	DN50	-	PE	-	-	-
	RS-554080300003	DN80					
	RS-554100400003	DN100					

# INDUSTRIAL FITTINGS - couplings

## Emergency couplings - ABVL



**Material:** SS (AISI 316Ti / AISI 316), Al  
**Seal:** O-ring: Viton (options: NBR, EPDM, Kalrez)  
 Flat seal: PTFE  
**Connections:** Standard - BSP female thread  
 Options - NPT female thread, BSP male thread, EN 1092, ASME flanges, weld-in ends  
**Size:** DN50, DN80, DN100, DN150  
**Working press.:** 25 bar  
**Working temp.:** From -40°C up to +150°C

### Operation

ABVL emergency coupling is an upgraded version of ABV coupling. The coupling protects against consequences of accidental, excessive strain of a hose assembly connected to an installation e.g. during reloading, when a tank truck rolls away and the hose is still connected. Before the hose is strained so much that it breaks or the fittings are torn off, the bolts joining both halves are broken so that the coupling disconnects. Simultaneously the valves in both coupling halves lock so the transferred medium is not released to the atmosphere. If the load is lateral, the coupling disconnects earlier. The lateral deflection of the force straining the hose from the coupling axis must not exceed 90°. The main advantage of ABVL couplings over ABV couplings is low pressure loss at high flow rates obtained by the valves of special, streamlined construction.

### Application

ABVL emergency couplings are used in industrial installations and reloading systems, to handle chemicals, fuels and gases.

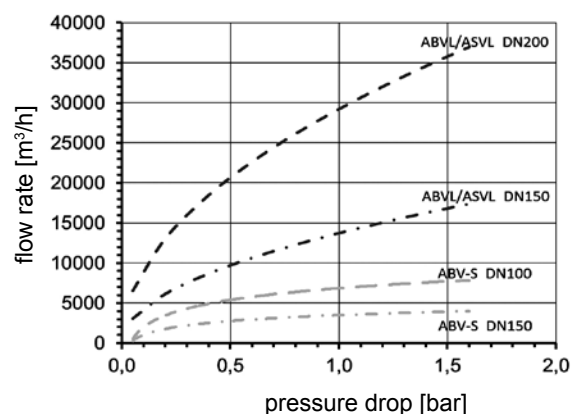
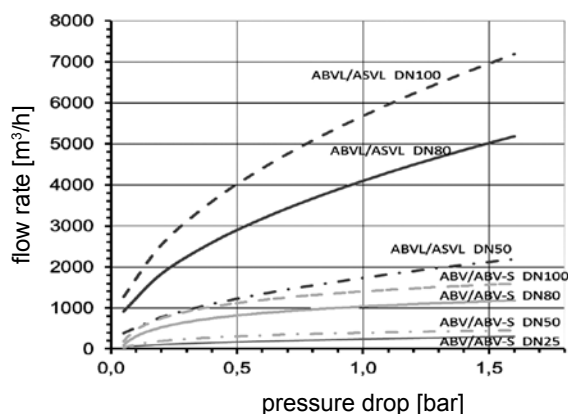
### Standards:

Compliant with the Pressure Equipment Directive (CE marking) and the ATEX Directive for operation in potentially explosive atmospheres.

### Axial force (P) breaking a coupling

DN [mm]	coupling break force [kN] - 0 bar	coupling break force [kN] - 16 bar	recommend. hose break force [kN]
50	12	8.8	16
80	22	14.7	30
100	30	19.5	40
150	60	38.6	80

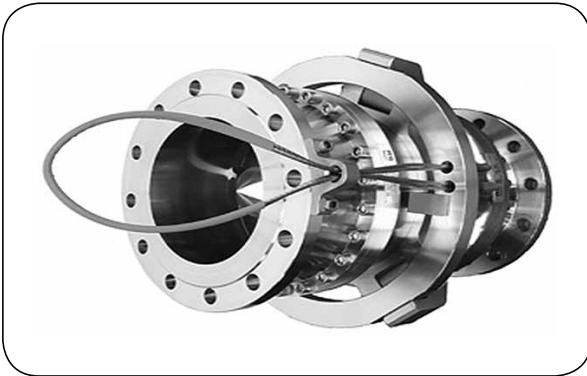
### Comparison of pressure drop in ABVL/ASVL and ABV/ABV-S emergency couplings



Test parameters: medium water, temperature +20°C.

# INDUSTRIAL FITTINGS - couplings

## Emergency couplings - ASVL



<b>Material:</b>	SS (AISI 316Ti / AISI 316)
<b>Seal:</b>	O-ring: Viton (options: NBR, EPDM, Kalrez) Flat seal: PTFE
<b>Connections:</b>	Standard - BSP female thread Option - NPT female thread, BSP male thread, EN 1092, ASME flanges
<b>Size:</b>	DN50, DN80, DN100, DN150, DN200
<b>Working press.:</b>	25 bar
<b>Working temp.:</b>	From -40°C up to +150°C

### Operation

ASVL emergency coupling is an upgraded version of ABV-S coupling. The coupling protect against consequences of accidental, excessive strain of a hose assembly connected to an installation e.g. during reloading, when a tank truck rolls away and the hose is still connected. When any displacement of a coupling connected to a tank truck occurs, the cable fixed to the coupling at one end and at the other to a rigid point on the installation is strained (the cable is shorter than the flexible hose assembly). The cable activates disconnection process. Simultaneously spring valves in both coupling halves lock, so the transferred medium is not discharged to the atmosphere. The coupling has three levers that connect coupling halves. The levers are released when the strain of the cable achieves pre-determined limit. The lateral deflection of the force straining the cable from the coupling axis must not exceed 90°. After emergency situation which caused disconnection of the coupling, the coupling can be connected again. However before it is reused, the coupling always requires thorough inspection. The main advantage of ASVL couplings over ABV-S couplings is low pressure loss at high flow rates obtained by the valves of special, streamlined construction.

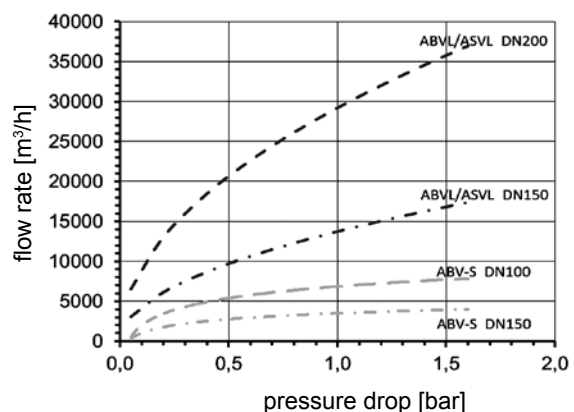
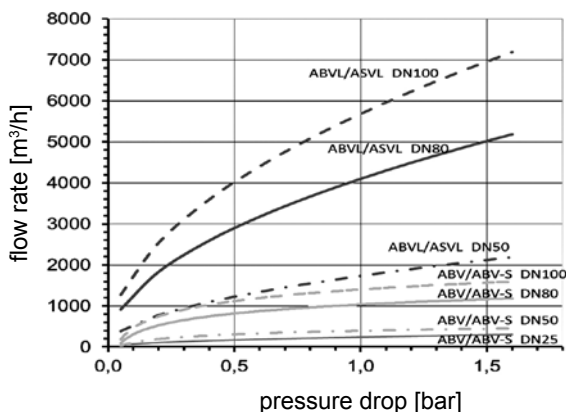
### Application

ASVL emergency couplings are used in industrial installations and reloading systems, to handle chemicals, fuels and gases.

### Standards:

Compliant with the Pressure Equipment Directive (CE marking) and the ATEX Directive for operation in potentially explosive atmospheres.

### Comparison of pressure drop in ABVL/ASVL and ABV/ABV-S emergency couplings



Test parameters: medium water, temperature +20°C.

# INDUSTRIAL FITTINGS - couplings

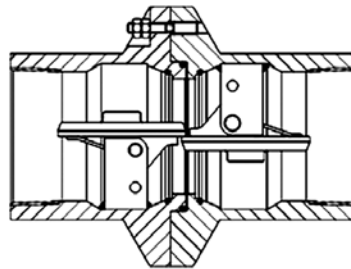
## Emergency couplings - KLAW



<b>Material:</b>	Stainless steel, carbon steel, aluminium
<b>Seal:</b>	Viton, PTFE
<b>Connections:</b>	BSP or BSPT thread, flanges, weld-in connectors
<b>Sizes:</b>	From 1" to 12"
<b>Working press.:</b>	Up to 40 bar (depends on a size)

### Operation

KLAW emergency couplings protect against consequences of accidental, excessive strain of a flexible hose assembly connected to an installation. The coupling with breaking pins is designed to transmit the load of the strained hose to the pre-determined breaking bolts. The bolts are broken before the hose and its fittings collapse. The coupling disconnects. Simultaneously flap valves (Flip-Flap) in both coupling halves lock so the transferred medium is not released to the atmosphere. The coupling contains three breaking pins that ensure even distribution of axial load. If the load is lateral, the coupling disconnects earlier. The lateral deflection of the force straining the hose from the coupling axis must not exceed 90°. After emergency situation which caused disconnection of the coupling and breakage of bolts, the coupling can be easily connected using a new set of bolts. However before it is reused, the coupling always requires meticulous inspection.



Available versions:

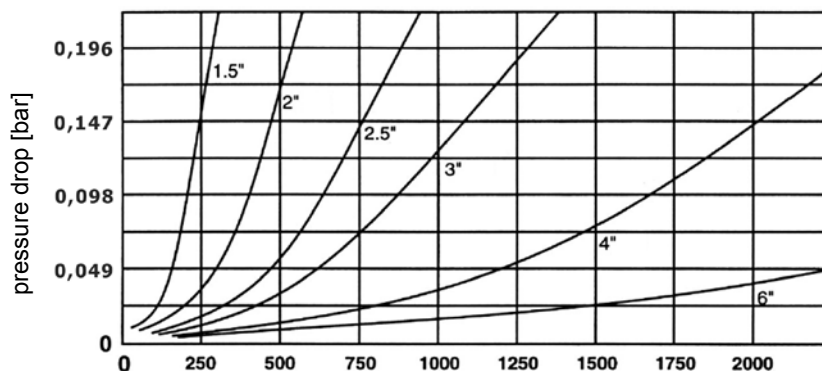
- MARINE - reloading in marine applications, assembled between two hose lengths,
- ERC - coupling with a cable, used with loading arms and other applications
- CRYOGENIC - for cryogenic media (down to -196°C - LNG, liquid oxygen, ethylene, propylene, ethane).

### Application

KLAW emergency couplings are used in industrial installations and reloading systems, to handle chemicals, fuels and gases.

### Standards

Compliant with the Pressure Equipment Directive (CE marking) and the ATEX Directive for operation in potentially explosive atmospheres, zone 1.



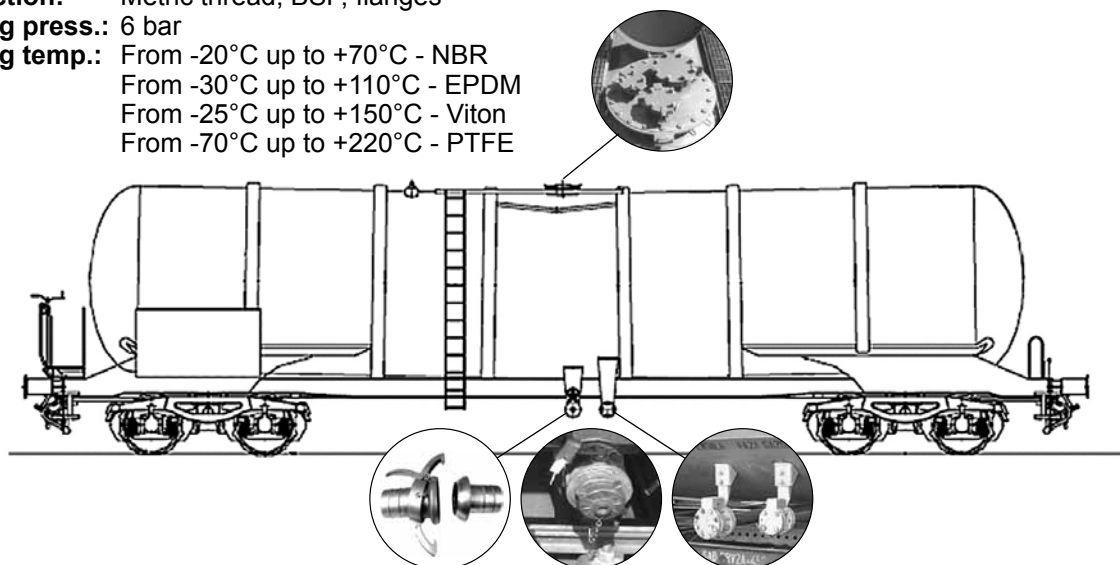
flow rate [l/min]

# INDUSTRIAL FITTINGS - couplings

## Rail tanker couplings

To allow bottom loading and unloading of e.g. fuel, rail tankers are equipped with pipe stubs finished with M130x6, M130x9 or M140x10 male thread (at the bottom part of a rail tanker) or with lever couplings e.g. PERROT for dry goods transfer. To allow top loading and unloading they include flange pipe stubs (the upper part of a rail tanker - under a hatch). Flange connectors serve as vapour recovery units.



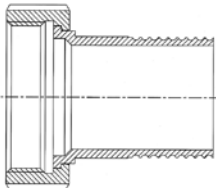
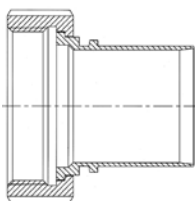
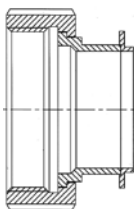
**Seal:** NBR (EPDM, Viton, PTFE available)  
**Connection:** Metric thread, BSP, flanges  
**Working press.:** 6 bar  
**Working temp.:** From -20°C up to +70°C - NBR  
 From -30°C up to +110°C - EPDM  
 From -25°C up to +150°C - Viton  
 From -70°C up to +220°C - PTFE



picture	code	size	material	description
 <b>NO</b>	ZK-N-130-06-A	M130x6 female	aluminium	Rail tanker nut (with seal). Stainless steel version (for adjustable spanner) available on request.
	ZK-N-130-06-M		brass	
	ZK-N-130-09-A	M130x9 female	aluminium	
	ZK-N-130-09-M		brass	
 <b>NHD</b>	ZK-NHD-130-06-A	M130x6 female	aluminium	Rail tanker Heavy Duty nut (with seal). Stainless steel version (for adjustable spanner) available on request.
	ZK-NHD-130-06-M		brass	
	ZK-NHD-130-09-A	M130x9 female	aluminium	
	ZK-NHD-130-09-M		brass	
	ZK-NHD-140-10-A	M140x10 female	aluminium	
	ZK-NHD-140-10-M		brass	
 <b>TG</b>	ZK-TG-075-A	DN75	aluminium	Spigot for rail tanker nut (without seal). Stainless steel version available on request.
	ZK-TG-075-M		brass	
	ZK-TG-100-A	DN100	aluminium	
	ZK-TG-100-M		brass	
 <b>TD</b>	ZK-TD-075-A	DN75	aluminium	Spigot (for composite hoses) for rail tanker nut (without seal). Stainless steel version available on request.
	ZK-TD-075-M		brass	
	ZK-TD-100-A	DN100	aluminium	
	ZK-TD-100-M		brass	


# INDUSTRIAL FITTINGS - couplings

## Rail tanker couplings

picture	code	size	material	description
 <b>TK</b>	ZK-TK-075-A	DN75	aluminium	Adapter - spigot for rail tanker nut (without seal) / A type CAM-LOCK coupling. Stainless steel version available on request.
	ZK-TK-075-M		brass	
 <b>TS</b>	ZK-TS-075-A	DN75	aluminium	Spigot for rail tanker nut (without seal). Stainless steel version available on request.
	ZK-TS-075-M		brass	
	ZK-TS-100-A	DN100	aluminium	
	ZK-TS-100-M		brass	
 <b>KGWK</b>	ZK-KGWK-130-06-100-SS	DN100 M130x6	AISI 316	Fitting with rail tanker nut for composite hose (without seal). M140x10 nut is available only as version with two lugs welded on (no version for hook wrench).
	ZK-KGWK-130-06-075-SS	DN75 M130x6		
	ZK-KGWK-130-09-100-SS	DN100 M130x9		
	ZK-KGWK-130-09-075-SS	DN75 M130x9		
	ZK-KGWK-140-10-100-SS	DN100 M140x10		
	ZK-KGWK-140-10-075-SS	DN75 M140x10		
 <b>KGWR</b>	ZK-KGWR-130-06-100-SS	DN100 M130x6	AISI 316	Fitting with rail tanker nut M130x6 female thread for rubber hose (without seal). M140x10 nut is available only as version with two lugs welded on (no version for hook wrench).
	ZK-KGWR-130-06-075-SS	DN75 M130x6		
	ZK-KGWR-130-09-100-SS	DN100 M130x9		
	ZK-KGWR-130-09-075-SS	DN75 M130x9		
	ZK-KGWR-140-10-100-SS	DN100 M140x10		
	ZK-KGWR-140-10-075-SS	DN75 M140x10		
 <b>KGWS</b>	ZK-KGWS-130-06-100-SS	DN100 M130x6	AISI 316	Fitting with rail tanker nut M130x6 female thread for steel hose (without seal). M140x10 nut is available only as version with two lugs welded on (no version for hook wrench).
	ZK-KGWS-130-06-075-SS	DN75 M130x6		
	ZK-KGWS-130-09-100-SS	DN100 M130x9		
	ZK-KGWS-130-09-075-SS	DN75 M130x9		
	ZK-KGWS-140-10-100-SS	DN100 M140x10		
	ZK-KGWS-140-10-075-SS	DN75 M140x10		

## INDUSTRIAL FITTINGS - couplings

### Rail tanker couplings

picture	code	size	material	description
 <b>NSGZ</b>	ZK-NSGZ-130-06-075-A	M130x6 female	aluminium	Adapter - female tread with seal / male thread. Stainless steel version available on request.
	ZK-NSGZ-130-06-075-M	3" male	brass	
	ZK-NSGZ-130-09-075-A	M130x9 female	aluminium	
	ZK-NSGZ-130-09-075-M	3" male	brass	
	ZK-NSGZ-130-06-100-A	M130x6 female	aluminium	
	ZK-NSGZ-130-06-100-M	4" male	brass	
	ZK-NSGZ-130-09-100-A	M130x9 female	aluminium	
	ZK-NSGZ-130-09-100-M	4" male	brass	
 <b>NSK</b>	ZK-NSK-130-06-075-A	M130x6 female	aluminium	Adapter - female thread with seal / A type CAM-LOCK coupling. Stainless steel version available on request.
	ZK-NSK-130-06-075-M	DN75	brass	
	ZK-NSK-130-09-075-A	M130x9 female	aluminium	
	ZK-NSK-130-09-075-M	DN75	brass	
	ZK-NSK-130-06-100-A	M130x6 female	aluminium	
	ZK-NSK-130-06-100-M	DN100	brass	
	ZK-NSK-130-09-100-A	M130x9 female	aluminium	
	ZK-NSK-130-09-100-M	DN100	brass	
 <b>ZKK</b>	ZK-ZKK-CA-100-A	DN100	aluminium	ZKK rail tanker coupling / A type CAMLOCK coupling
	ZK-ZKK-GZ-100-A	4" male	aluminium	ZKK rail tanker coupling / male thread.



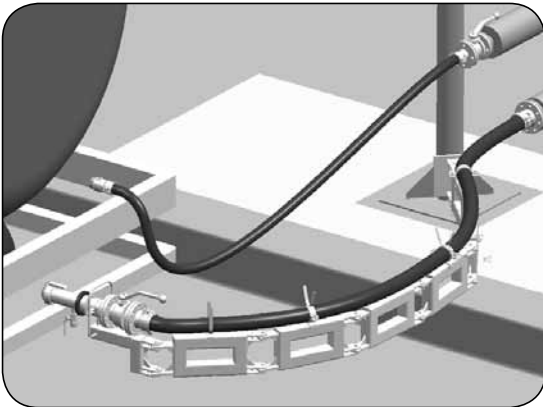
# INDUSTRIAL FITTINGS - couplings

## Sight glasses

picture	code	size	material	description
 <b>FLGZ</b>	ZP-P-FLGZ2-A	DN50 2" BSP male	aluminium	Sight glass - flange / female. Seal: NBR (made of Viton available).
	ZP-P-FLGZ2-M		brass	
	ZP-P-FLGZ2-SS		AISI 316	
	ZP-P-FLGZ3-A	DN80 3" BSP male	aluminium	
	ZP-P-FLGZ3-M		brass	
	ZP-P-FLGZ3-SS		AISI 316	
	ZP-P-FLGZ4-A	DN100 4" BSP male	aluminium	
	ZP-P-FLGZ4-M		brass	
	ZP-P-FLGZ4-SS		AISI 316	
 <b>FLFL</b>	ZP-P-FLFL2-A	DN50	aluminium	Sight glass - 2 x flange. Seal: NBR (made of Viton available).
	ZP-P-FLFL2-M		brass	
	ZP-P-FLFL2-SS		AISI 316	
	ZP-P-FLFL3-A	DN80	aluminium	
	ZP-P-FLFL3-M		brass	
	ZP-P-FLFL3-SS		AISI 316	
	ZP-P-FLFL4-A	DN100	aluminium	
	ZP-P-FLFL4-M		brass	
	ZP-P-FLFL4-SS		AISI 316	
 <b>GWGW</b>	ZP-P-GWGW2-A	2" BSP female	aluminium	Sight glass - 2 x female. Seal: NBR (made of Viton available).
	ZP-P-GWGW2-M		brass	
	ZP-P-GWGW2-SS		AISI 316	
	ZP-P-GWGW3-A	3" BSP female	aluminium	
	ZP-P-GWGW3-M		brass	
	ZP-P-GWGW3-SS		AISI 316	
	ZP-P-GWGW4-A	4" BSP female	aluminium	
	ZP-P-GWGW4-M		brass	
	ZP-P-GWGW4-SS		AISI 316	
 <b>GZGZ</b>	ZP-P-GZGZ2-A	2" BSP male	aluminium	Sight glass - 2 x male. Seal: NBR (made of Viton available).
	ZP-P-GZGZ2-M		brass	
	ZP-P-GZGZ2-SS		AISI 316	
	ZP-P-GZGZ3-A	3" BSP male	aluminium	
	ZP-P-GZGZ3-M		brass	
	ZP-P-GZGZ3-SS		AISI 316	
	ZP-P-GZGZ4-A	4" BSP male	aluminium	
	ZP-P-GZGZ4-M		brass	
	ZP-P-GZGZ4-SS		AISI 316	
 <b>GWGZ</b>	ZP-P-GWGZ2-A	2" female 2" BSP male	aluminium	Sight glass - male / female. Seal: NBR (made of Viton available).
	ZP-P-GWGZ2-M		brass	
	ZP-P-GWGZ2-SS		AISI 316	
	ZP-P-GWGZ3-A	3" female 3" BSP male	aluminium	
	ZP-P-GWGZ3-M		brass	
	ZP-P-GWGZ3-SS		AISI 316	
	ZP-P-GWGZ4-A	4" female 4" BSP male	aluminium	
	ZP-P-GWGZ4-M		brass	
	ZP-P-GWGZ4-SS		AISI 316	
 <b>FLK</b>	ZP-P-FLK2-A	DN50	aluminium	Sight glass - flange / CAM-LOCK A. Seal: NBR (made of Viton available).
	ZP-P-FLK2-M		brass	
	ZP-P-FLK2-SS		AISI 316	
	ZP-P-FLK3-A	DN80	aluminium	
	ZP-P-FLK3-M		brass	
	ZP-P-FLK3-SS		AISI 316	
	ZP-P-FLK4-A	DN100	aluminium	
	ZP-P-FLK4-M		brass	
	ZP-P-FLK4-SS		AISI 316	
 <b>GWK</b>	ZP-P-GWK2-A	2" female DN50	aluminium	Sight glass - female / CAM-LOCK A. Seal: NBR (made of Viton available).
	ZP-P-GWK2-M		brass	
	ZP-P-GWK2-SS		AISI 316	
	ZP-P-GWK3-A	3" female DN80	aluminium	
	ZP-P-GWK3-M		brass	
	ZP-P-GWK3-SS		AISI 316	
	ZP-P-GWK4-A	3" female DN100	aluminium	
	ZP-P-GWK4-M		brass	
	ZP-P-GWK4-SS		AISI 316	

# INDUSTRIAL FITTINGS - couplings

## Loading arm SGA



<b>Material:</b>	Stainless steel (1.4301/1.4401) Carbon steel 1.0037 RAL 5002 Galvanized carbon steel 1.0037
<b>Assembly location:</b>	Wall, foot (support) or other type
<b>Reloading:</b>	Bottom or top
<b>Length:</b>	From 2 to 6 m
<b>Bending radius:</b>	From 150 to 450 mm

### Operation

A loading arm is designed to carry a flexible hose assembly and thus facilitate work of its operator. Depending on the size the loading arm consists of several segments joined together with bolts. Slide bearings enable rotary movement. There is a flexible hose assembly attached to the loading arm. This hose assembly has an emergency brakeaway coupling at its end on the tank truck side. In an emergency incident (a tank truck rolls away though the assembly is still connected) breaking bolts connecting coupling halves are broken and the coupling disconnects. Simultaneously spring valves in both coupling halves lock so the transferred medium is not released to the atmosphere. The loading arm protects the hose against pulling forces.

### Advantages

- a hose assembly is not dragged over the ground and consequently damaged (longer service life),
- easy handling - an operator does not lift the assembly - it is crucial when heavier assemblies DN80, DN100 are used,
- time efficiency.

### Selection

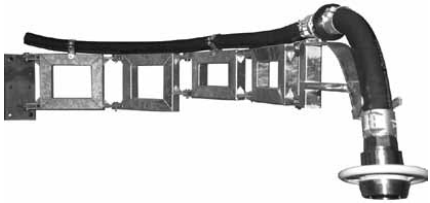
In order to select a proper hose loading arm, a customer must fill in an information form (a form is supplied by one of the TUBES INTERNATIONAL® employees).

### Application

The loading arms are used in industrial installations and reloading systems, to handle chemicals, fuels and gases. The loading arms in different lengths and P-SGA version for food and pharmaceutical application are also available.

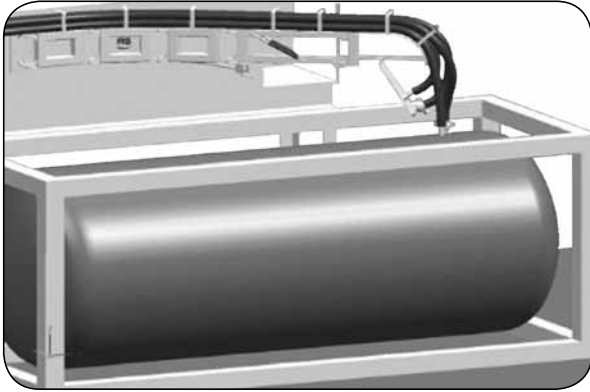
### Standards

Manufactured according to the standards of the producer (Roman Seliger, Germany).

picture	DN	code	length [m]	material
	25	RS-SGA025350190	3.5	galvanized steel
		RS-SGA025350160		stainless steel
	50	RS-SGA050350190		galvanized steel
		RS-SGA050350160		stainless steel
	80	RS-SGA080350190		galvanized steel
		RS-SGA080350160		stainless steel
	100	RS-SGA100350190		galvanized steel
		RS-SGA100350160		stainless steel

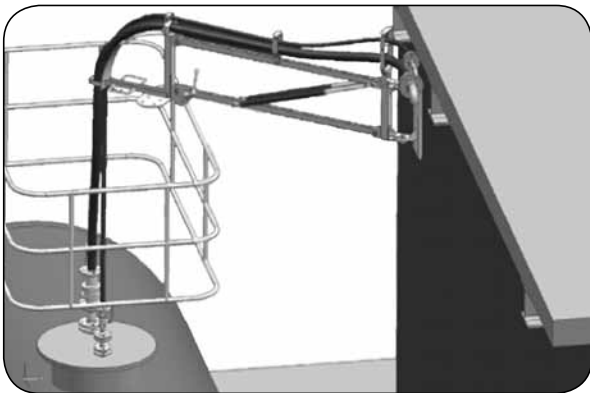
## INDUSTRIAL FITTINGS - couplings

### Loading arm SGA



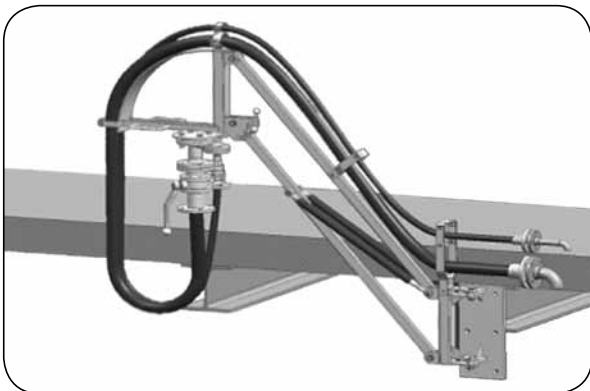
Top loading:

- handles four heated hose assemblies for product transfer;
- there is a docking unit at the end of the arm that safely supports the couplings of all four hose assemblies after use;
- the last segment of the loading arm allows vertical operation (0.5 m) as a locking arm with gas actuators protects the segment against dropping;
- arm length: 3.5 m;
- arm material: acid-resistant steel.



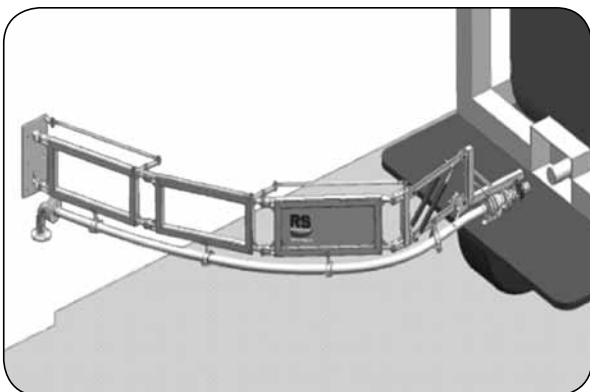
Top loading:

- carries two hose assemblies (product and vapour transfer),
- allows vertical operation (1.2 m),
- there is a locking arm that protects the loading arm against dropping when the hose assembly is connected to the tank truck,
- arm length: 2.3 m,
- hose assembly diameter: DN50;
- arm material: galvanized steel.



Top loading:

- there is a docking unit under the arm that safely supports the couplings of hose assemblies after use.



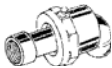

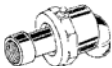


















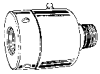

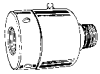








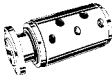
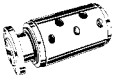
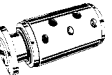
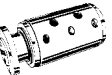
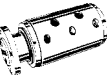





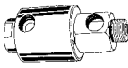

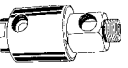




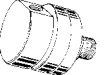
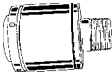
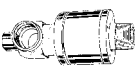

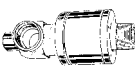
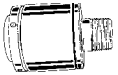
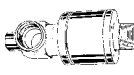
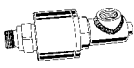
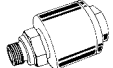
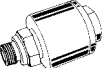


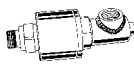
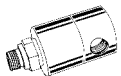
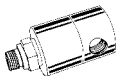
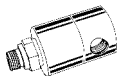

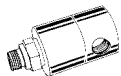




Bottom loading:

- 5% slope of the loading arm for hose assembly drainage,
- carries one hose assembly for product transfer,
- the last segment of the loading arm allows vertical operation (0.25 m) as a locking arm with gas actuators protects the segment against dropping,
- the coupling is parallel to the end of the loading arm; movement of the arm is additionally limited by a pantograph,
- the hose assembly is fixed under the loading arm,
- arm length: 4.5 m,
- hose assembly diameter: DN50,
- arm material: galvanized steel.

# INDUSTRIAL FITTINGS - couplings

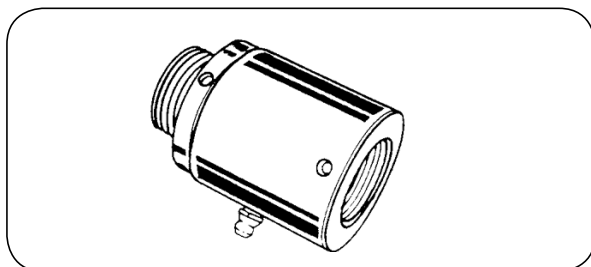
## GT swivel joints

GT swivel joints are designed for fixed installations or flexible hose assembly connections, where rotary movements or oscillations between certain installation parts take place. While choosing a swivel joint one has to take into consideration medium, working pressure, temperature, frequency of rotation (r.p.m.) or oscillations, number of ports in multiconnection joints. For proper selection, please contact Sales or Technical Department of TUBES INTERNATIONAL®.

series	water	air	vacuum	steam	hot oil	hydraulic oil	pressure [bar]
400 4200							25
1000							25
1000-2							25
BR							25
1800 SR 1800 SRDE							350
							700
1200 SR/SR2 1400 SR							350
MC MC R2 MC RVR							400
							12
BATR BATR VR							400
							12
1600 1600 B							200
3 S							10
800 SR3 900 SR3							20
800 SR4 900 SR4							50
800 SR5							50
600-700 (EX 3S)							250

# INDUSTRIAL FITTINGS - couplings

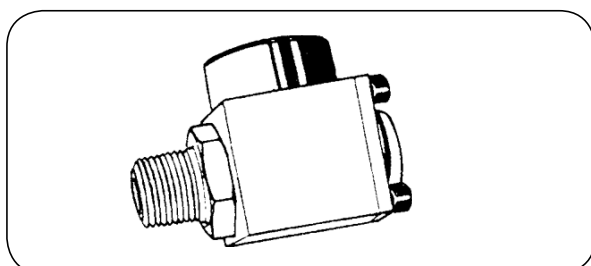
## GT swivel joints



### 1000

**Material:** Nickel-plated steel, AISI 316L  
**Seal:** PTFE  
**Working temp.:** Up to +200°C  
**Thread:** BSP female thread, BSP male thread  
**Rotation:** Slow, swivelling

nickel-plated steel			AISI 316L		
code	thread size [inch]	working pressure [bar]	code	thread size [inch]	working pressure [bar]
GT-1013-K	1/4	50	GT-1013-I	1/4	20
GT-1017-K	3/8	50	GT-1017-I	3/8	20
GT-1021-K	1/2	50	GT-1021-I	1/2	20
GT-1027-K	3/4	50	GT-1027-I	3/4	20
GT-1034-K	1	30	GT-1034-I	1	15
GT-1042-K	1.1/4	30	GT-1042-I	1.1/4	15
GT-1049-K	1.1/2	30	GT-1049-I	1.1/2	15
GT-1060-K	2	20	GT-1060-I	2	10
GT-1076-K	2.1/2	20	GT-1076-I	2.1/2	10
GT-1090-K	3	20	GT-1090-I	3	10



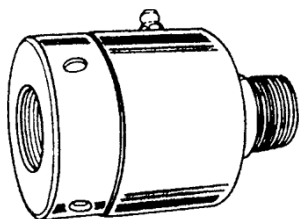
### 1200 SR

**Material:** Steel, nickel-plated steel, AISI 316L  
**Seal:** NBR, Viton, PTFE  
**Working temp.:** Up to +150°C (+120°C for AISI 316L)  
**Thread:** BSP female thread, BSPT male thread  
**Rotation:** Slow, swivelling

nickel-plated steel			AISI 316L		
code	thread size [inch]	working pressure [bar]	code	thread size [inch]	working pressure [bar]
GT-1213-SRK	1/4	350	GT-1213-SRI	1/4	175
GT-1217-SRK	3/8	350	GT-1217-SRI	3/8	175
GT-1221-SRK	1/2	300	GT-1221-SRI	1/2	150
GT-1227-SRK	3/4	300	GT-1227-SRI	3/4	150
GT-1234-SRK	1	250	GT-1234-SRI	1	125
GT-1242-SRK	1.1/4	250	GT-1242-SRI	1.1/4	125
GT-1249-SRK	1.1/2	200	GT-1249-SRI	1.1/2	100

# INDUSTRIAL FITTINGS - couplings

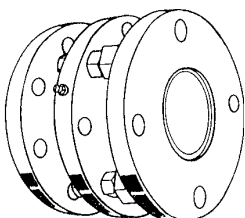
## GT swivel joints



### 1800 SR

**Material:** Steel, nickel-plated steel, AISI 316L  
**Seal:** NBR, Viton, PTFE  
**Working temp.:** Up to +200°C (+120°C for AISI 316L)  
**Thread:** BSP female thread, BSPT male thread  
**Rotation:** Slow, swivelling

nickel-plated steel			AISI 316L		
code	thread size [inch]	working pressure [bar]	code	thread size [inch]	working pressure [bar]
GT-1813-SRK	1/4	350	GT-1813-SRI	1/4	175
GT-1817-SRK	3/8	350	GT-1817-SRI	3/8	175
GT-1821-SRK	1/2	300	GT-1821-SRI	1/2	150
GT-1827-SRK	3/4	300	GT-1827-SRI	3/4	150
GT-1834-SRK	1	250	GT-1834-SRI	1	125
GT-1842-SRK	1.1/4	250	GT-1842-SRI	1.1/4	125
GT-1849-SRK	1.1/2	200	GT-1849-SRI	1.1/2	100
GT-1860-SRK	2	200	GT-1860-SRI	2	100
GT-1876-SRK	2.1/2	150	GT-1876-SRI	2.1/2	75
GT-1890-SRK	3	150	GT-1890-SRI	3	75



### BR

**Material:** Nickel-plated steel, AISI 316L  
**Seal:** PTFE  
**Working temp.:** Up to +200°C (+120°C for AISI 316L)  
**Pressure:** Up to 20 bar (depends on diameter)  
**Connections:** Flange  
**Rotation:** Slow, swivelling

nickel-plated steel			AISI 316L		
code	size [inch]	flange	code	size [inch]	flange
GT-BR050-K	2	PN16	GT-BR050-I	2	PN16
GT-BR066-K	2.1/2	PN16	GT-BR066-I	2.1/2	PN16
GT-BR080-K	3	PN16	GT-BR080-I	3	PN16
GT-BR100-K	4	PN16	GT-BR100-I	4	PN16
GT-BR125-K	5	PN16	GT-BR125-I	5	PN16
GT-BR150-K	6	PN16	GT-BR150-I	6	PN16
GT-BR175-K	7	PN10	GT-BR175-I	7	PN10
GT-BR200-K	8	PN10	GT-BR200-I	8	PN10
GT-BR250-K	10	PN10	GT-BR250-I	10	PN10
GT-BR300-K	12	PN10	GT-BR300-I	12	PN10

# INDUSTRIAL FITTINGS - couplings

## SJ swivel joints



**Material:** AISI 316, brass, aluminium  
**Connections:** BSP, NPT, BSPT, ACME, groove couplings, butt weld, DIN, ASA, TW, TTMA flanges  
**Working press.:** 20 bar (single ball bearing coupling)  
**Working temp.:** From -40°C up to +250°C

Swivel joint designed for fixed installations or flexible hose assemblies where transfer of torsional moment to other installation parts must be prevented. Widely used in chemical and petrochemical industry. Are not resistant to large bending moment (in cases swivel joints with double ball bearing are recommended - Heavy Duty type).

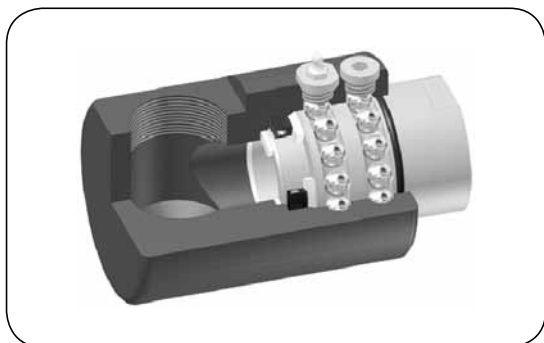
Couplings meet the requirements of pressure directive 97/23/EC (PED), TDT, TÜV, Apragaz.

code	connection* [BSP]	working press. [bar]	material	seal	
				O-ring	thread
MK-ZO-D01011401B	3/4" female thread	10	aluminium	Viton	PUR
MK-ZO-D01012401B		20	brass		PUR
MK-ZO-D01014401A			AISI 316		PTFE
MK-ZO-D03031401B	1" female thread	10	aluminium		PUR
MK-ZO-D03032401B		20	brass		PUR
MK-ZO-D03034401A			AISI 316		PTFE
MK-ZO-D05051401B	1.1/4" female thread	10	aluminium		PUR
MK-ZO-D05052401B		20	brass		PUR
MK-ZO-D05054401A			AISI 316		PTFE
MK-ZO-D07071401B	1.1/2" female thread	10	aluminium		PUR
MK-ZO-D07072401B		20	brass		PUR
MK-ZO-D07074401A			AISI 316		PTFE
MK-ZO-D10101401B	2" female thread	10	aluminium		PUR
MK-ZO-D10102401B		20	brass		PUR
MK-ZO-D10104401A			AISI 316		PTFE
MK-ZO-D12121401B	2.1/2" female thread	10	aluminium		PUR
MK-ZO-D12122401B		20	brass		PUR
MK-ZO-D12124401A			AISI 316		PTFE
MK-ZO-D14141401B	3" female thread	10	aluminium		PUR
MK-ZO-D14142401B		20	brass		PUR
MK-ZO-D14144401A			AISI 316		PTFE
MK-ZO-D16161401B	4" female thread	10	aluminium		PUR
MK-ZO-D16162401B		20	brass		PUR
MK-ZO-D16164401A			AISI 316		PTFE

\* - female/male and male/male threads are available on request.

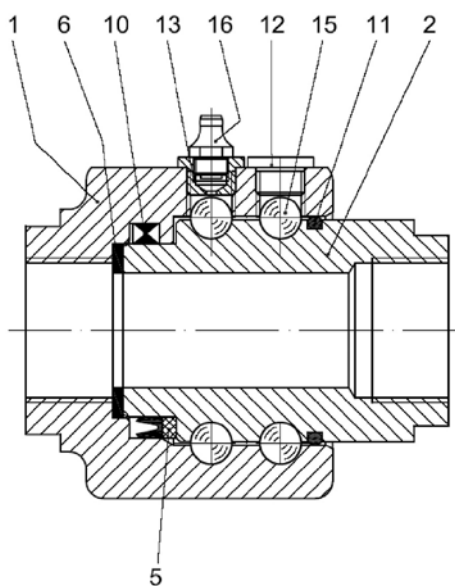
# INDUSTRIAL FITTINGS - couplings

## Swivel joints - T type



**Material:** Carbon steel 42CrMo4, or AISI 316Ti  
**Seal:** NBR, PU, PTFE  
**Connections:** BSP, BSPT, NPT female  
**Working press.:** Up to 420 bar - carbon steel  
                           Up to 100 bar - AISI 316Ti  
**Working temp.:** Up to +250°C  
**Rotation:** Up to 80 r.p.m.

T type swivel joint designed to connect pipelines, installations and hose assemblies, in which swivelling or oscillatory movements between parts occur. Used in chemical, petrochemical, papermaking industry, etc. T type swivel joints are available from 1/4" to 2". Three versions: straight (10 type), angle type (11 type), and double angle type (12 type). During selection process, consider: medium, working pressure, frequency of rotation and oscillatory speed. Please contact Sales or Technical Department of TUBES INTERNATIONAL® for proper selection.



- 1 - immovable part
- 2 - swivelling part
- 5 - stabilizing ring
- 6 - scraper ring
- 10 - main seal
- 11 - seal
- 12 - blank cap
- 13 - blank cap
- 15 - balls
- 16 - lubricator



10 type



11 type



12 type



# INDUSTRIAL FITTINGS - couplings

## HAMMER LUG system



**Material:** A105 carbon steel  
(for types 100 ÷ 400)  
AISI 4130 steel  
(for 600 ÷ 2202 types)

**Working press.:** From 69 bar up to 1378 bar  
(depending on type)

The HAMMER LUG couplings are designed for quick connection of flexible hose assemblies and pipelines. Widely used in transfer applications for air, oil, water, drilling fluid, gas and other substances. Available in a variety of options (threaded, butt weld) in diameters from 1" up to 8". Available with DNV Type Approval. To find out more about HAMMER LUG offer, please contact Sales Department of TUBES INTERNATIONAL®.

**Note: Connection of different figures is forbidden!**



male part



female part



male cap



female cap






nut

picture	code	description	size	characteristics
	Fig. 100			
	HL-FIG0100KG-050	(male, female + wing nut)	2"	General purpose low pressure coupling. Widely used to transfer air, water, oil and gas. Colour: yellow / black. Pressure: 1000 PSI (69 bar). Material: carbon steel. Connection: NPT female thread. Seal: metal / metal (cone).
	HL-FIG0100DG-050	female	2"	
	HL-FIG0100MG-050	male	2"	
	HL-FIG0100NG-050	wing nut	2"	
	HL-FIG0100KG-075	(male, female + wing nut)	3"	
	HL-FIG0100DG-075	female	3"	
	HL-FIG0100MG-075	male	3"	
	HL-FIG0100NG-075	wing nut	3"	
	HL-FIG0100KG-100	(male, female + wing nut)	4"	
	HL-FIG0100DG-100	female	4"	
	HL-FIG0100MG-100	male	4"	
	HL-FIG0100NG-100	wing nut	4"	
	HL-FIG0100KG-150	(male, female + wing nut)	6"	
	HL-FIG0100DG-150	female	6"	
	HL-FIG0100MG-150	male	6"	
	HL-FIG0100NG-150	wing nut	6"	

# INDUSTRIAL FITTINGS - couplings

## HAMMER LUG system


table continuation:

picture	code	description	size	characteristics
	Fig. 200			General purpose coupling widely used to transfer air, water, oil and gas. Perfect for applications up to 2000 PSI. Colour: grey/blue. Pressure: 2000 PSI (138 bar). Material: carbon steel. Connection: NPT female thread. Seal: metal/metal (cone).
	HL-FIG0200KG-025	(male, female + wing nut)	1"	
	HL-FIG0200DG-025	female	1"	
	HL-FIG0200MG-025	male	1"	
	HL-FIG0200NG-025	wing nut	1"	
	HL-FIG0200KG-050	(male, female + wing nut)	2"	
	HL-FIG0200DG-050	female	2"	
	HL-FIG0200MG-050	male	2"	
	HL-FIG0200NG-050	wing nut	2"	
	HL-FIG0200KG-075	(male, female + wing nut)	3"	
	HL-FIG0200DG-075	female	3"	
	HL-FIG0200MG-075	male	3"	
	HL-FIG0200NG-075	wing nut	3"	
	HL-FIG0200KG-100	(male, female + wing nut)	4"	
	HL-FIG0200DG-100	female	4"	
	HL-FIG0200MG-100	male	4"	
	HL-FIG0200NG-100	wing nut	4"	
	Fig. 206			General purpose coupling widely used to transfer air, water, oil and gas. Perfect for medium pressure applications. Additional O-ring improves sealing and extends service life. Colour: grey/blue. Pressure: 2000 PSI (138 bar). Material: carbon steel. Connection: NPT female thread. Seal: metal/metal (cone) + additional seal (NBR).
	HL-FIG0206KG-050	(male, female + wing nut)	2"	
	HL-FIG0206DG-050	female	2"	
	HL-FIG0206MG-050	male	2"	
	HL-FIG0206NG-050	wing nut	2"	
	HL-FIG0206KG-100	(male, female + wing nut)	4"	
	HL-FIG0206DG-100	female	4"	
	HL-FIG0206MG-100	male	4"	
	HL-FIG0206NG-100	wing nut	4"	
	HL-FIG0206KG-150	(male, female + wing nut)	6"	
	HL-FIG0206DG-150	female	6"	
	HL-FIG0206MG-150	male	6"	
	HL-FIG0206NG-150	wing nut	6"	
	Fig. 602			General purpose coupling widely used to transfer air, oil and gas. Lip type elastomeric seal (NBR) protects metal-to-metal seal and reduces turbulence in the line. Colour: orange/black. Pressure: 6000 PSI (414 bar). Material: AISI 4130 chromium molybdenum-plated steel. Connection: NPT female thread. Seal: metal/metal (cone) + additional lip type seal (NBR).
	HL-FIG0602KG-025	(male, female + wing nut)	1"	
	HL-FIG0602DG-025	female	1"	
	HL-FIG0602MG-025	male	1"	
	HL-FIG0602NG-025	wing nut	1"	
	HL-FIG0602KG-050	(male, female + wing nut)	2"	
	HL-FIG0602DG-050	female	2"	
	HL-FIG0602MG-050	male	2"	
	HL-FIG0602NG-050	wing nut	2"	
	HL-FIG0602KG-075	(male, female + wing nut)	3"	
	HL-FIG0602DG-075	female	3"	
	HL-FIG0602MG-075	male	3"	
	HL-FIG0602NG-075	wing nut	3"	
	HL-FIG0602KG-100	(male, female + wing nut)	4"	
	HL-FIG0602DG-100	female	4"	
	HL-FIG0602MG-100	male	4"	
	HL-FIG0602NG-100	wing nut	4"	

# INDUSTRIAL FITTINGS - couplings

## HAMMER LUG system



table continuation:

picture	code	description	size	characteristics
	Fig. 1002			General purpose high pressure coupling. Widely used in cement tank trucks and high pressure equipment. Colour: blue/red. Pressure: 10000 PSI (689 bar). Material: AISI 4130 chromium molybdenum-plated steel. Connection: NPT female thread. * - butt weld (wall thickness XXH). Seal: metal/metal (cone) + additional lip type seal (NBR).
	HL-FIG1002KG-050	(male, female + wing nut)	2"	
	HL-FIG1002DG-050	female	2"	
	HL-FIG1002MG-050	male	2"	
	HL-FIG1002NG-050	wing nut	2"	
	HL-FIG1002KG-100	(male, female + wing nut)	4"	
	HL-FIG1002DG-100	female	4"	
	HL-FIG1002MG-100	male	4"	
	HL-FIG1002KW-100*	(male, female + wing nut)	4"	
	HL-FIG1002DW-100*	female	4"	
	HL-FIG1002MW-100*	male	4"	
	HL-FIG1002NG-100	wing nut	4"	
	HL-FIG1002KG-125	(male, female + wing nut)	5"	
	HL-FIG1002DG-125	female	5"	
	HL-FIG1002MG-125	male	5"	
	HL-FIG1002KW-125*	(male, female + wing nut)	5"	
	HL-FIG1002DW-125*	female	5"	
	HL-FIG1002MW-125*	male	5"	
	HL-FIG1002NG-125	wing nut	5"	
	Fig. 1003			General purpose high pressure coupling. Widely used in cement tank trucks and high pressure equipment. Ensures tight sealing and allows for misalignment of up to 7° from the centre line. Colour: green/black. Pressure: 10000 PSI (689 bar). Material: AISI 4130 steel. Connection: butt weld (wall thickness XXH). Seal: metal/metal (cone) + O-ring (NBR).
	HL-FIG1003KW-075	(male, female + wing nut)	3"	
	HL-FIG1003DW-075	female	3"	
	HL-FIG1003MW-075	male	3"	
	HL-FIG1003NG-075	wing nut	3"	
	HL-FIG1003KW-100	(male, female + wing nut)	4"	
	HL-FIG1003DW-100	female	4"	
	HL-FIG1003MW-100	male	4"	
	HL-FIG1003NG-100	wing nut	4"	
	HL-FIG1003KW-125	(male, female + wing nut)	5"	
	HL-FIG1003DW-125	female	5"	
	HL-FIG1003MW-125	male	5"	
	HL-FIG1003NG-125	wing nut	5"	
	Fig. 1502			The most popular type of Hammer Lug coupling due to its rugged construction. Widely used in standard applications (to transfer air, water, oil and gas) as well as in very specific ones such as choke/kill lines, cementing lines, fracturing applications, etc. Colour: red/blue. Pressure: 15000 PSI (1034 bar). Material: AISI 4130 chromium molybdenum-plated steel. Connection: NPT female thread. * - butt weld (wall thickness XXH). Seal: metal/metal (cone) + additional lip type seal (NBR).
	HL-FIG1502KG-050	(male, female + wing nut)	2"	
	HL-FIG1502DG-050	female	2"	
	HL-FIG1502MG-050	male	2"	
	HL-FIG1502KW-050*	(male, female + wing nut)	2"	
	HL-FIG1502DW-050*	female	2"	
	HL-FIG1502MW-050*	male	2"	
	HL-FIG1502NG-050	wing nut	2"	
	HL-FIG1502KG-075	(male, female + wing nut)	3"	
	HL-FIG1502DG-075	female	3"	
	HL-FIG1502MG-075	male	3"	
	HL-FIG1502KW-075*	(male, female + wing nut)	3"	
	HL-FIG1502DW-075*	female	3"	
	HL-FIG1502MW-075*	male	3"	
	HL-FIG1502NG-075	wing nut	3"	

# INDUSTRIAL FITTINGS - couplings

## HAMMER LUG system

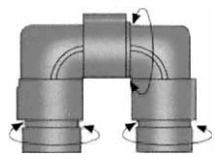

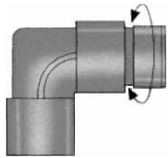

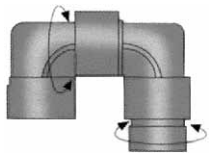
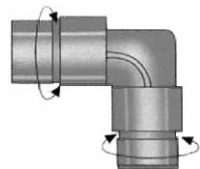
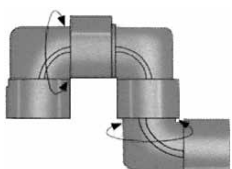
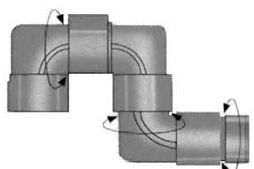
table continuation:

picture	code	description	size	characteristics
Fig. 1502				
	HL-FIG1502DI-050	female part with integral crimp ferrule	2"	This version of HAMMER LUG coupling allows to assemble a female or male part directly on a hydraulic hose R13, R15 type with a crimp ferrule.  This solution totally eliminates the risk that the coupling untwists so the safety of the hose operator is significantly improved (no threaded connection between a coupling and a hose fitting).
	HL-FIG1502MI-050	male part with integral crimp ferrule	2"	

## Swivel unions

Swivel union with two rows of bearings (LONG RADIUS - LR version equipped with three rows of bearings). Designed to transfer drilling fluid, water, cement, abrasives, etc. Widely used in applications associated with fracturing, cementing, flushing, choke and kill lines. Available in 1" to 3" sizes with NPT thread or HAMMER LUG connection (male or female). Version designed for use with hydrogen sulphide available on request. The seal not only seals the swivel union but also reduces friction of the bearings. Additionally, heat properties of the bearings are improved to ensure longer life service. Smooth internal surface of the union ensures minimal pressure drop. Material: AISI 4130 chromium molybdenum-plated steel.

code	size	description
HL-ZO-1502-S10-DM-LR-050	2"	LR version S10 type swivel union with HL 1502 type fitting (female/male)
HL-ZO-1502-S20-DM-LR-050	2"	LR version S20 type swivel union with HL 1502 type fitting (female/male)
HL-ZO-1502-S50-DM-LR-050	2"	LR version S50 type swivel union with HL 1502 type fitting (female/male)

<b>S10 type</b>  3 swivels, 2 elbows	<b>S20 type</b>  1 swivel	<b>S30 type</b>  1 swivel, 1 elbow	<b>S40 type</b>  1 swivel, 2 elbows
<b>S50 type</b>  2 swivels, 2 elbows	<b>S60 type</b>  2 swivels, 1 elbow	<b>S70 type</b>  2 swivels, 3 elbows	<b>S80 type</b>  3 swivels, 3 elbows

# INDUSTRIAL FITTINGS - couplings

## HAMMER LUG system





### Pipe unions

One-piece pipe unions (no welded parts) designed to transfer abrasive materials, drilling fluid, water, cement, etc. Widely used in fracturing, cementing, flushing, wireline services, choke and kill lines, etc. Available as elbows, tees, crosses in 1" to 3" sizes with NPT thread or HAMMER LUG connection (male or female). Version for hydrogen sulphide is also available.


Material: AISI 4130 chromium molybdenum-plated steel.

Working press.: 6000 PSI (414 bar) for HL fig. 602, 15000 PSI (1034 bar) for HL fig.1502.

code	size	description
HL-ZK90-1502-DD-050	2"	90° elbow with fig. 1502 (2 x female)
HL-ZK90-1502-DM-050	2"	90° elbow with fig. 1502 (female, male)
HL-ZK90-1502-MM-050	2"	90° elbow with fig. 1502 (2 x male)
HL-ZK90-1502-MM-075	3"	90° elbow with fig. 1502 (2 x male)
HL-T-1502-DDD-050	2"	Tee with fig. 1502 (3 x female)
HL-T-1502-MMM-050	2"	Tee with fig. 1502 (3 x male)
HL-T-1502-MDM-050	2"	Tee with fig. 1502 (2 x male, 1 x female)
HL-ZP-0602-MD-075-0600	3"	Pup joint with fig. 602 (male, female) 3", Lc = 600 mm (2ft)
HL-ZP-0602-MD-075-1200	3"	Pup joint with fig. 602 (male, female) 3", Lc = 1200 mm (4ft)
HL-ZP-0602-MD-075-2400	3"	Pup joint with fig. 602 (male, female) 3", Lc = 2400 mm (8ft)
HL-ZP-1502-MD-050-0300	2"	Pup joint with fig. 1502 (male, female) 2", Lc = 300 mm (1ft)
HL-ZP-1502-MD-050-1200	2"	Pup joint with fig.1502 (male, female) 2", Lc = 1200 mm (4ft)
HL-ZP-1502-MD-050-2400	2"	Pup joint with fig.1502 (male, female) 2", Lc = 2400 mm (8ft)
HL-ZP-1502-MD-075-0600	3"	Pup joint with fig. 1502 (male, female) 3", Lc = 600 mm (2ft)
HL-ZP-1502-MD-075-1200	3"	Pup joint with fig. 1502 (male, female) 3", Lc = 1200 mm (4ft)
HL-ZP-1502-MD-075-2400	3"	Pup joint with fig. 1502 (male, female) 3", Lc = 2400 mm (8ft)

<b>ZK 90 type</b>  90° elbow	<b>T type</b>  pipe tee	<b>ZP type</b>  pup joint	<b>C type</b>  pipe cross
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### Valves

picture	code	size	description
	HL-Z-1502-MD-050	2"	Valve designed for drilling fluid, water, cement, etc. Used for fracturing, cementing, and other high pressure applications. Material: AISI 4130. Working press.: 15000 PSI (1034 bar). Connections: HL fig.1502 (male x female).

## INDUSTRIAL FITTINGS - couplings

### Oil and gas extraction, other couplings

Couplings for drilling fluid tanks are used for drilling operations around the world. The drilling fluid is necessary to carry the cuttings to the surface, cool the drilling equipment in the well and to stabilize the well bore. The tanks within a drilling fluid system must be leak tight, easily twist to close or twist to open for diameters from 4 up to 16 inch. There are two types of connections. The first type is „pneumatic” (Seal-O-Grip) - a rubber seal is inflated to achieve leak tight connection between the pipe and the tank. The second type of connection, Hammerseal coupling, seals on O-ring when a nut is tightened.



#### Seal-O-Grip

**Material:** Carbon steel  
**Seal:** NBR  
**Working press:** 11.4 bar (170 PSI)

Seal-O-Grip is an air-inflatable coupling intended for suction or return lines of low pressure formation fluid or drilling fluid. The steel body of the coupling is welded into a drilling fluid tank or manifold pipeline. The connection is leak tight as soon as the seal is inflated, even if the pipe is not perfectly aligned. The seal made of NBR rubber is resistant to oil and abrasion. It can be inflated up to 13.8 bar pressure up against the external diameter of the connecting pipe. The use of the couplings speeds up the connection process and eliminates the need to use low pressure flange connections.



#### Hammer Seal

**Material:** Carbon steel  
**Seal:** NBR  
**Working press:** 10 bar (150 PSI)

Hammer Seal coupling is intended for fast connection of drilling fluid tanks, with no flanges used. Even if drilling fluid tanks are not perfectly aligned, Hammer Seal coupling ensures tight, leakproof connection. A female unit with male thread must be welded into the tank, whereas a connecting pipe is equipped with a nut with female thread and O-ring. The coupling provides the perfect, leakproof connection as soon as the nut with O-ring is tightened.

# INDUSTRIAL FITTINGS - couplings

## API flange couplings



**Material:** Carbon steel  
**Working press:** From 138 bar to 1380 bar  
 (depending on flange type)

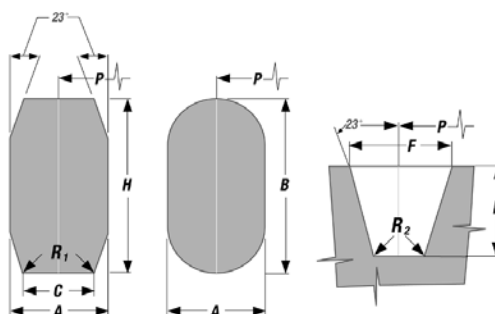
Flange couplings are widely used in petrochemical industry e.g. to connect pipelines or to connect a blowout preventer. The flanges are of a groove type, compatible with sealing rings of R, RX and BX type. Made according to API standard. Fixed flanges with welding neck are also available.

API 6B					
138 bar (2000 PSI)		207 bar (3000 PSI)		345 bar (5000 PSI)	
size [inch]	ring number (R or RX)	size [inch]	ring number (R or RX)	size [inch]	ring number (R or RX)
2.1/16	23	2.1/16	24	2.1/16	24
2.9/16	26	2.9/16	27	2.9/16	27
3.1/8	31	3.1/8	31	3.1/8	35
4.1/16	37	4.1/16	37	4.1/16	39
5.1/8	41	5.1/8	41	5.1/8	44
7.1/16	45	7.1/16	45	7.1/16	46
9	49	9	49	9	50
11	53	11	53	11	54
13.5/8	57	13.5/8	57	-	-
16.3/4	65	16.3/4	66	-	-
21.1/4	73	20.3/4	74	-	-
API 6BX					
138 bar (2000 PSI)		207 bar (3000 PSI)		345 bar (5000 PSI)	
size [inch]	ring number (BX)	size [inch]	ring number (BX)	size [inch]	ring number (BX)
26.3/4	167	26.3/4	168	13.5/8	160
30	303	30"	303	16.3/4	162
-	-	-	-	18.3/4	163
-	-	-	-	21.1/4	165
690 bar (10000 PSI)		1035 bar (15000 PSI)		1380 bar (20000 PSI)	
1.13/16	151	1.13/16	151	1.13/16	151
2.1/16	152	2.1/16	152	2.1/16	152
2.9/16	153	2.9/16	153	2.9/16	153
3.1/16	154	3.1/16	154	3.1/16	154
4.1/16	155	4.1/16	155	4.1/16	155
5.1/8	169	5.1/8	169	7.1/16	156
7.1/16	156	7.1/16	156	9	157
9	157	9	157	11	158
11	158	11	158	13.5/8	159
13.5/8	159	13.5/8	159	-	-
16.3/4	162	18.3/4	164	-	-
18.3/4	164	-	-	-	-
21.1/4	166	-	-	-	-

# INDUSTRIAL FITTINGS - couplings

## API ring gaskets

Steel sealing rings designed for connection and sealing of specially skived grooved flanges. Used in high pressure and high temperature connections. Manufactured of carbon steel. Cast iron or stainless steel versions available on request. Meets the requirements of API-6A.



**R type**

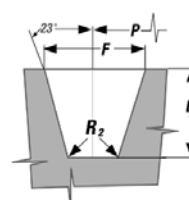
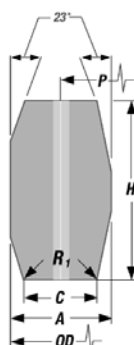
code	dimensions [inch]								
	P	A	B	H	C	R1	E	F	R2
HL-RO-020	2.688	0.313	0.56	0.50	0.206	0.06	0.25	0.344	0.03
HL-RO-023	3.250	0.438	0.69	0.63	0.305	0.06	0.31	0.469	0.03
HL-RO-024	3.750	0.438	0.69	0.63	0.305	0.06	0.31	0.469	0.03
HL-RO-026	4.000	0.438	0.69	0.63	0.305	0.06	0.31	0.469	0.03
HL-RO-027	4.250	0.438	0.69	0.63	0.305	0.06	0.31	0.469	0.03
HL-RO-031	4.875	0.438	0.69	0.63	0.305	0.06	0.31	0.469	0.03
HL-RO-035	5.375	0.438	0.69	0.63	0.305	0.06	0.31	0.469	0.03
HL-RO-037	5.875	0.438	0.69	0.63	0.305	0.06	0.31	0.469	0.03
HL-RO-039	6.375	0.438	0.69	0.63	0.305	0.06	0.31	0.469	0.03
HL-RO-041	7.125	0.438	0.69	0.63	0.305	0.06	0.31	0.469	0.03
HL-RO-044	7.625	0.438	0.69	0.63	0.305	0.06	0.31	0.469	0.03
HL-RO-045	8.313	0.438	0.69	0.63	0.305	0.06	0.31	0.469	0.03
HL-RO-046	8.313	0.500	0.75	0.69	0.341	0.06	0.38	0.531	0.06
HL-RO-047	9.000	0.750	1.00	0.94	0.485	0.06	0.50	0.781	0.06
HL-RO-049	10.625	0.438	0.69	0.63	0.305	0.06	0.31	0.469	0.03
HL-RO-050	10.625	0.625	0.88	0.81	0.413	0.06	0.44	0.656	0.06
HL-RO-053	12.750	0.438	0.69	0.63	0.305	0.06	0.31	0.469	0.03
HL-RO-054	12.750	0.625	0.88	0.81	0.413	0.06	0.44	0.656	0.06
HL-RO-057	15.000	0.438	0.69	0.63	0.305	0.06	0.31	0.469	0.03
HL-RO-063	16.500	1.000	1.31	1.25	0.681	0.09	0.62	1.063	0.09
HL-RO-065	18.500	0.438	0.69	0.63	0.305	0.06	0.31	0.469	0.03
HL-RO-066	18.500	0.625	0.88	0.81	0.413	0.06	0.44	0.656	0.06
HL-RO-069	21.000	0.438	0.69	0.63	0.305	0.06	0.31	0.469	0.03
HL-RO-070	21.000	0.750	1.00	0.94	0.485	0.06	0.50	0.781	0.06
HL-RO-073	23.000	0.500	0.75	0.69	0.341	0.06	0.38	0.531	0.06
HL-RO-074	23.000	0.750	1.00	0.94	0.485	0.06	0.50	0.781	0.06

Sealing ring with an octagonal cross-section. Ensure better sealing of the connection than ring gaskets with an oval cross-section. To order, please contact Sales or Technical Department of TUBES INTERNATIONAL®. Working pressure up to 700 bar. Working temperature (carbon steel) from -40°C up to +500°C.



# INDUSTRIAL FITTINGS - couplings

## API ring gaskets



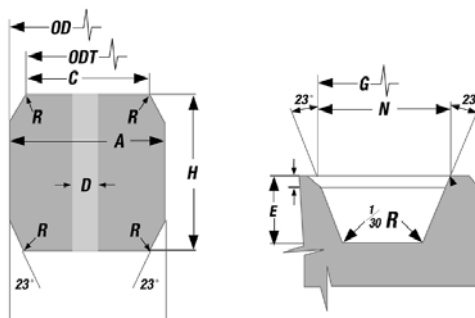
**RX type**

code	dimensions [inch]								
	P	OD	A	C	H	R1	E	F	R2
HL-RX-020	2.688	3.000	0.344	0.182	0.125	0.06	0.25	0.344	0.03
HL-RX-023	3.250	3.672	0.469	0.254	0.167	0.06	0.31	0.469	0.03
HL-RX-024	3.750	4.172	0.469	0.254	0.167	0.06	0.31	0.469	0.03
HL-RX-025	4.000	4.313	0.344	0.182	0.125	0.06	0.25	0.344	0.03
HL-RX-026	4.000	4.406	0.469	0.254	0.167	0.06	0.31	0.469	0.03
HL-RX-027	4.250	4.656	0.469	0.254	0.167	0.06	0.31	0.469	0.03
HL-RX-031	4.875	5.297	0.469	0.254	0.167	0.06	0.31	0.469	0.03
HL-RX-035	5.375	5.797	0.469	0.254	0.167	0.06	0.31	0.469	0.03
HL-RX-037	5.875	6.297	0.469	0.254	0.167	0.06	0.31	0.469	0.03
HL-RX-039	6.375	6.797	0.469	0.254	0.167	0.06	0.31	0.469	0.03
HL-RX-041	7.125	7.547	0.469	0.254	0.167	0.06	0.31	0.469	0.03
HL-RX-044	7.625	8.047	0.469	0.254	0.167	0.06	0.31	0.469	0.03
HL-RX-045	8.313	8.734	0.469	0.254	0.167	0.06	0.31	0.469	0.03
HL-RX-046	8.313	8.750	0.531	0.263	0.188	0.06	0.38	0.531	0.06
HL-RX-047	9.000	9.656	0.781	0.407	0.271	0.09	0.50	0.781	0.06
HL-RX-049	10.625	11.047	0.469	0.254	0.167	0.06	0.31	0.469	0.03
HL-RX-050	10.625	11.156	0.656	0.335	0.208	0.06	0.44	0.656	0.06
HL-RX-053	12.750	13.172	0.469	0.254	0.167	0.06	0.31	0.469	0.03
HL-RX-054	12.750	13.281	0.656	0.335	0.208	0.06	0.44	0.656	0.06
HL-RX-057	15.000	15.422	0.469	0.254	0.167	0.06	0.31	0.469	0.03
HL-RX-073	23.000	23.469	0.531	0.263	0.208	0.06	0.38	0.531	0.06
HL-RX-074	23.000	23.656	0.781	0.407	0.271	0.09	0.50	0.781	0.06
HL-RX-210	3.500	3.844	0.375	0.213	0.125	0.03	0.25	0.750	0.03

RX type sealing ring is interchangeable with R type. Working pressure up to 750 bar. Working temperature (carbon steel) from -40°C up to +500°C.

# INDUSTRIAL FITTINGS - couplings

## API ring gaskets



**BX type**

code	dimensions [inch]								
	OD	H	A	ODT	C	D	E	G	N
HL-BX-150	2.842	0.366	0.366	2.790	0.314	0.06	0.22	2.893	0.450
HL-BX-151	3.008	0.379	0.379	2.954	0.325	0.06	0.22	30.62	0.466
HL-BX-152	3.334	0.403	0.403	3.277	0.346	0.06	0.23	3.395	0.498
HL-BX-153	3.974	0.448	0.448	3.910	0.385	0.06	0.27	4.046	0.554
HL-BX-154	4.600	0.488	0.488	4.531	0.419	0.06	0.30	4.685	0.606
HL-BX-155	5.825	0.560	0.560	5.746	0.481	0.06	0.33	5.930	0.698
HL-BX-156	9.367	0.733	0.733	9.263	0.629	0.12	0.44	9.521	0.921
HL-BX-157	11.593	0.826	0.826	11.476	0.709	0.12	0.50	11.774	1.039
HL-BX-158	13.860	0.911	0.911	13.731	0.782	0.12	0.56	14.064	1.149
HL-BX-159	16.800	1.012	1.012	16.657	0.869	0.12	0.62	17.033	1.279
HL-BX-160	15.850	0.938	0.541	15.717	0.408	0.12	0.56	16.063	0.786
HL-BX-161	19.347	1.105	0.638	19.191	0.482	0.12	0.67	19.604	0.930
HL-BX-162	18.720	0.560	0.560	18.641	0.481	0.06	0.33	18.832	0.705
HL-BX-163	21.896	1.185	0.684	21.728	0.516	0.12	0.72	22.185	1.006
HL-BX-164	22.463	1.185	0.968	22.295	0.800	0.12	0.72	22.752	1.290
HL-BX-165	24.595	1.261	0.728	24.417	0.550	0.12	0.75	24.904	1.071
HL-BX-166	25.198	1.261	1.029	25.020	0.851	0.12	0.75	25.507	1.373
HL-BX-167	29.896	1.412	0.516	29.696	0.316	0.06	0.84	30.249	0.902
HL-BX-168	30.128	1.412	0.632	29.928	0.432	0.06	0.84	30.481	1.018
HL-BX-169	6.831	0.624	0.509	6.743	0.421	0.06	0.38	6.955	0.666
HL-BX-170	8.584	0.560	0.560	8.505	0.481	0.06	0.33	8.696	0.705
HL-BX-171	10.529	0.560	0.560	10.450	0.481	0.06	0.33	10.641	0.705
HL-BX-172	13.113	0.560	0.560	13.034	0.481	0.06	0.33	13.225	0.705
HL-BX-303	33.573	1.494	0.668	33.361	0.457	0.06	0.89	33.949	1.078

BX type sealing ring can only be used for flanges and grooves of API BX type. BX model has an opening allowing for pressure balance. Working pressure up to 1500 bar. Working temperature (carbon steel) from -40°C up to +500°C.

# INDUSTRIAL FITTINGS - couplings

## Stainless steel hygienic couplings

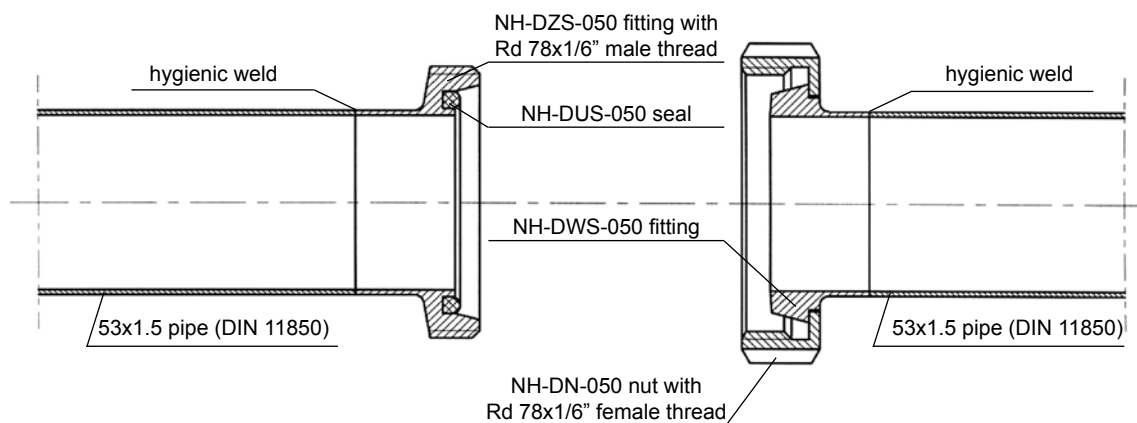


Stainless steel hygienic couplings are intended for food, pharmaceutical, cosmetics and chemical industries as well as for biotechnology. At first the couplings were primarily used in dairy and brewing industry to connect pipe installations using an internal expansion method (a pipe is pressed from the inside out into a fitting). Nowadays they are welded using methods that ensure the highest quality of the weld adequate to the hygienic requirements. The hygienic couplings come in different standards that differ in terms of the type of connection and sealing that further determine different levels of hygiene of the couplings required by various applications. The hygienic design of a coupling is defined by accessible and easy cleaning and sterilization without dismantling (CIP, SIP) and use of adequate materials. The requirements for hygienic couplings are set in several regulations and standards e.g. 3-A (3-A Sanitary Standards Incorporated), EHEDG (European Hygienic Engineering & Design Group), ASME BPE-2009 (Bioprocessing Equipment). In general, the standards require to avoid all kinds of crevices or dead spaces that may cause particles accumulation and growth of microorganisms. Internal surfaces must be smooth and nonporous. The surface roughness must not exceed  $Ra = 0.8 \mu m$  and  $Ra = 0.4 \mu m$  when the requirements for the internal surface roughness are higher. Some surfaces may need electro-polishing. Welds are subject to separate requirements. The internal folds of the surface should be smoothened out by an angle that facilitates cleaning. Seals should be the closest possible to the transferred medium avoiding crevices and the risk of product getting under the seal.

### Coupling material

Depending on the medium and level of requirements, hygienic couplings are made of AISI 304 (304L) stainless steel or (e.g. for low pH media and for higher requirements) of AISI 316 (316L) steel or other materials. Seals should be compliant with appropriate standards (e.g. FDA 21 CFR177.2600 and USP Class VI for elastomers, FDA 21 CFR 177.1550 for PTFE).

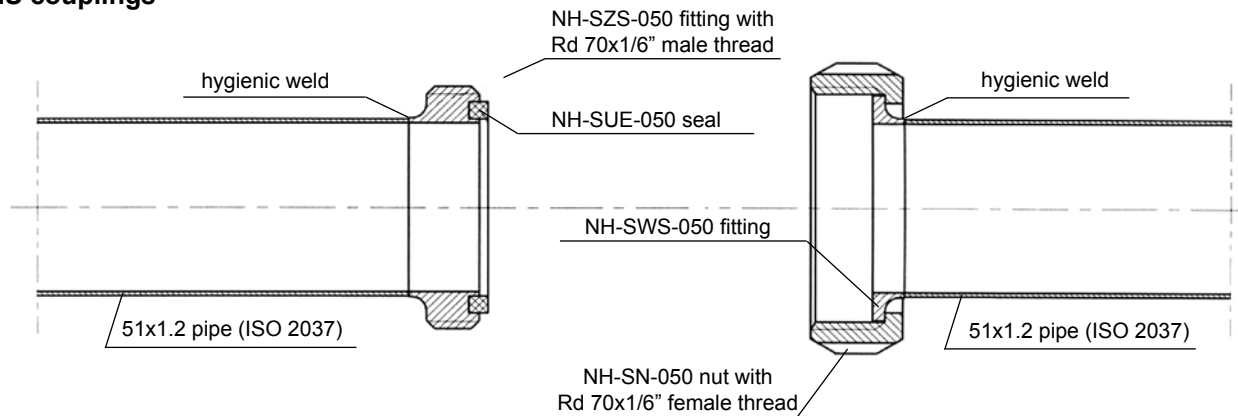
### DIN 11851 couplings



Threaded couplings according to DIN11851 with a rounded thread (marked Rd) are widely used in food and chemical industry. A seal with a D-shaped cross section is a standard. In order to ensure higher level of hygiene a seal with a lip is used which fills the crevice between connected halves. Maximum working pressure (for a coupling according to DIN 11851 itself) is 40 bar (DN10 ÷ DN40), 25 bar (DN50 ÷ DN100) and 16 bar (DN125 ÷ DN150).

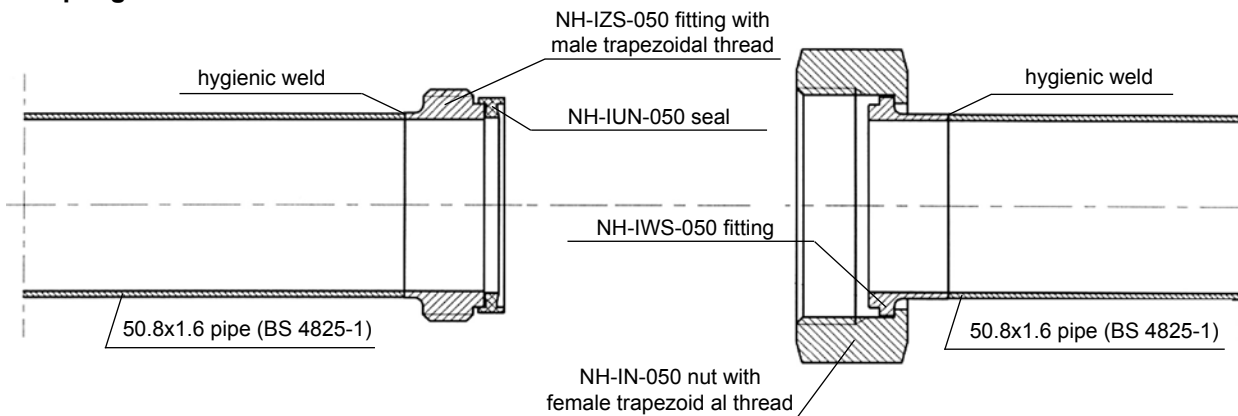
## Stainless steel hygienic couplings

### SMS couplings



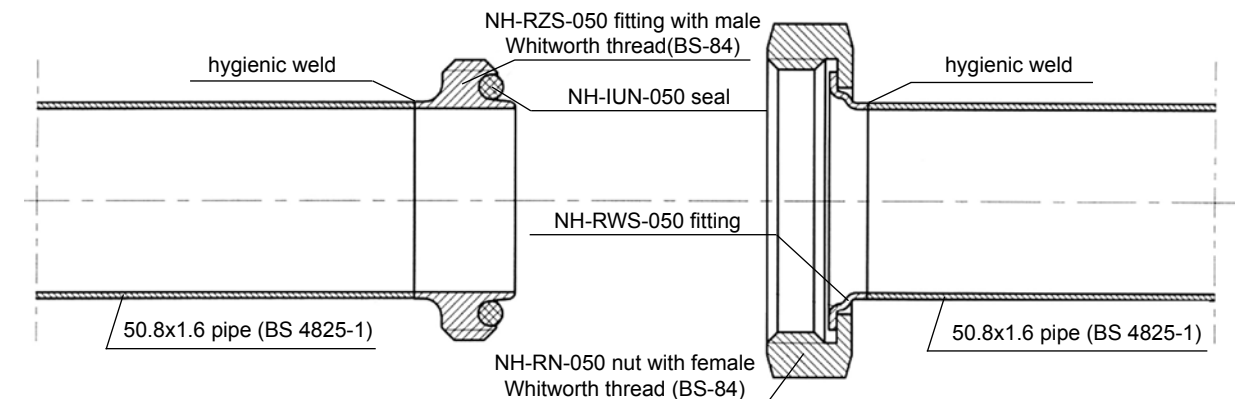
Threaded SMS couplings according to Swedish standard with a rounded thread (marked Rd) are used in food industry. A seal with a rectangular cross section is a standard. The coupling facilitates dismantling of segments of installation. Maximum working pressure (for a coupling itself) is 15 bar.

### IDF couplings



Threaded IDF (International Dairy Federation, BS 4825-4 and ISO 2853 standards) couplings with a trapezoidal thread are used in food industry. A seal with a T-shaped cross section as a standard gives a crevice free design and so a high level of hygiene. Maximum working pressure (for a coupling according to BS 4825-4 itself) is 16 bar.

### RJT couplings

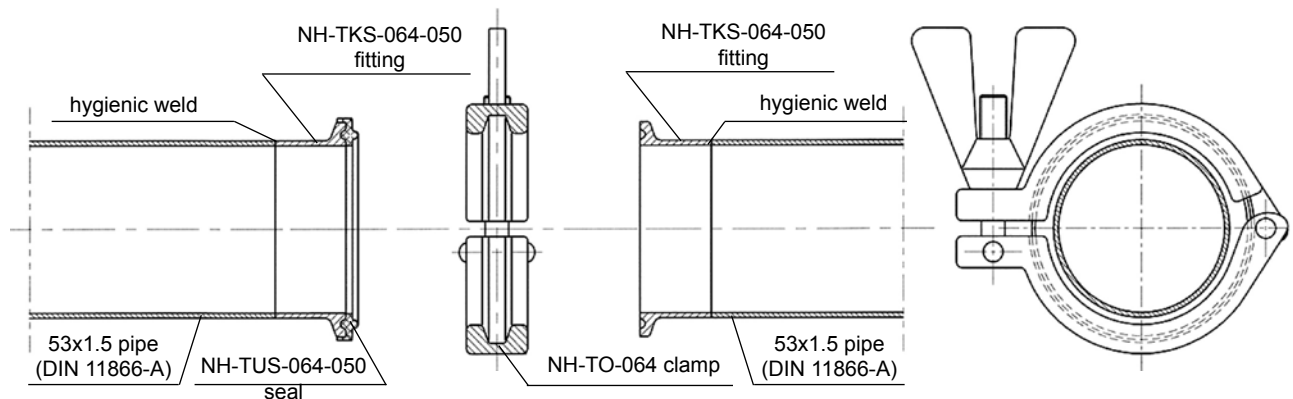


Threaded RJT couplings (Ring Joint Type, BS 4825-5 standard) with Whitworth thread are extensively used in British food industry in particular. Sealed by a thick O-ring. Very easy to dismantle. Due to a large crevice, the couplings are not suitable for cleaning without dismantling (CIP). Maximum working pressure (for a coupling according to BS 4825-5 itself) is 10 bar.

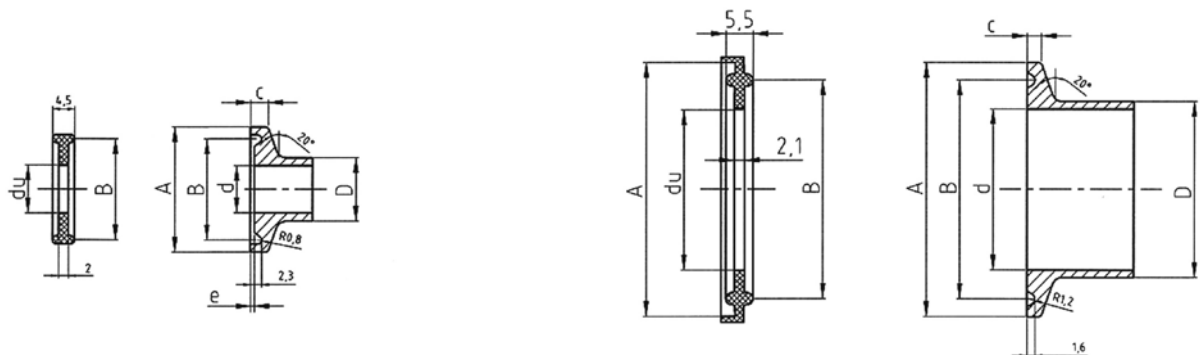
# INDUSTRIAL FITTINGS - couplings

## Stainless steel hygienic couplings

### TRICLOVER (Tri-Clamp) couplings



TRICLOVER couplings consist of two flanges („plates”) with grooves to accommodate a seal, secured by a clamp. The seal fills up the crevice between two flanges so that it ensures high hygiene of the coupling. Used in pharmaceutical, food, cosmetic and chemical industries, in biotechnology, for fluids and high viscosity media. TRICLOVER couplings are manufactured in compliance with such standards as: ISO 2852, DIN 32676, BS 4825-3 and other, which generally define the same basic dimensions of connection (see table). It is typical of TRICLOVER couplings that the diameter of the flange (A) and the internal diameter (d) correspond to the internal diameter of the pipes in the installation. The working pressure of the coupling itself depends on the size of the coupling and type of the clamp applied (at least 16 bar up to 2", 10 bar - above 2").



standard				ISO 2852		DIN32676 - A		ISO 1127 DIN 32676 - B		ASME BPE DIN32676 - C		BS 4825-3		size [inch]	
pipe standard				ISO 2037		DIN 11866 - A DIN 11850		ISO 1127 DIN 11866 - B		ASME BPE DIN 11866 - C		BS 4825-1			
A	B	c	e	D	d	D	d	D	d	D	d	D	d		
25 (25.4*)	20.2 (20.3*)	3.6 (3.7*)	0.8 (0*)			6**	4**			6.35	4.57			1/4	
						8	6								
						10	8	10.2	7	9.53	7.75			3/8	
						12	10	13.5	10.3	12.7	9.4	12.7	9.5	1/2	
						14**	12**								
						16**	14**								
						18**	16**	17.2	14	19.05	15.75	19.05	15.85	3/4	
34	27.5	2.85	0	12	10										
				12.7	10.7	13	10								
				17.2	15.2	19	16								
				21.3	19.3	23	20								
50.5	43.5	2.85						21.3	18.1						
				25	22.6	29	26	26.9	23.7	25.4	22.1	25.4	22.2	1	
				33.7	31.3	35	32	33.7	29.7						
				38	35.6	41	38			38.1	34.8	38.1	34.9	1.1/2	
64	56.5	2.85			40	37.6		42.4	38.4						
				51	48.6	53	50	48.3	44.3	50.8	47.5	50.8	47.6	2	
77.5	70.5	2.85			63.5	60.3			60.3	56.3	63.5	60.2	63.5	60.3	2 1/2

Note: \* - according to BS 4825-3; \*\* - utilized, but not listed in a standard.

# INDUSTRIAL FITTINGS - couplings

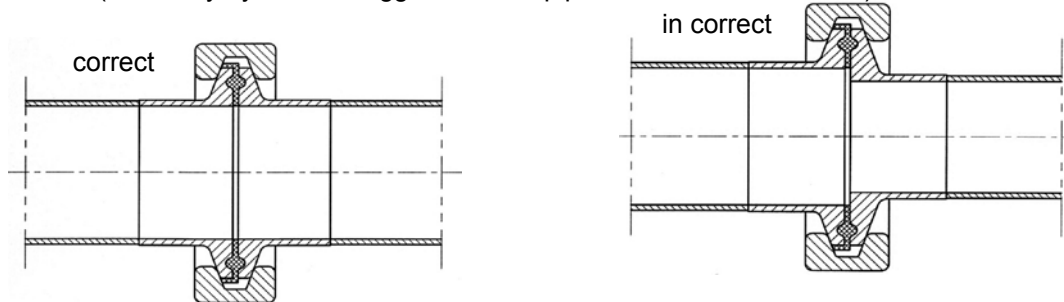
## Stainless steel hygienic couplings

TRICLOVER couplings - table follow up

standard				ISO 2852		DIN32676 - A		ISO 1127, DIN 32676 - B		ASME BPE, DIN32676 - C		BS 4825-3		size [inch]
pipe standard				ISO 2037		DIN 11866 - A, DIN 11850		ISO 1127, DIN 11866 - B		ASME BPE, DIN 11866 - C		BS 4825-1		
A	B	c	e	D	d	D	d	D	d	D	d	D	d	
91	83.5	2.85	0	70	66.8	70	66							
				76.1	72.9			76.1	72.1	76.2	72.9	76.2	73	3
106	97	2.85		88.9	84.9	85	81	88.9	84.3					
119	110	2.85		101.6	97.6	104	100			101.6	97.38	101.6	97.6	4
130	122	2.85		114.3	110.3			114.3	109.7			114.3	110.3	
155	146	5.6		139.7	135.7	129	125	139.7	134.5			139.7	135.7	
167	156.5	5.6								152.4	146.86			6
183	174	5.6		168.3	163.1	154	150	168.3	163.1			168.3	163.1	
233.5	225	5.6		219.1	213.9	204	200	219.1	213.9			219.1	213.9	

### Hygiene of TRICLOVER couplings

In order to ensure hygiene of a TRICLOVER coupling, both halves must have the same internal diameter. Otherwise there is a shoulder in the flange bore which creates a dead space where particles can accumulate. As cleaning of such spot requires dismantling, the connection is no longer hygienic. Therefore TRICLOVER couplings must be selected with regard to a flange diameter (A) and to a pipeline internal diameter (d). It applies to fittings that are welded in the installation and flexible hose assemblies as well. The internal diameter of a seal must be also properly selected (nominally by 0.2 mm bigger than the pipeline internal diameter d).



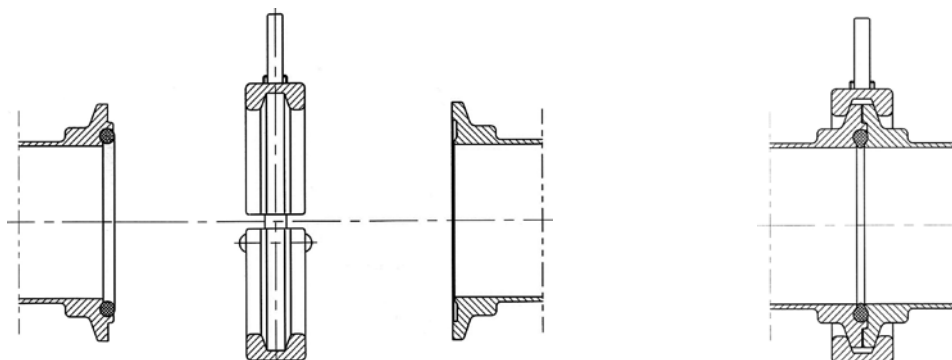
### Aseptic couplings

The couplings according to DIN standard were developed to make aseptic DIN11853 and DIN 11864 couplings (compatible, of different length), available in 3 standard options:

- DIN 11853-1 / DIN 11864-1 - screwed Rd thread couplings
- DIN 11853-2 / DIN 11864-2 - flange couplings bolted together
- DIN 11853-3 / DIN 11864-3 - flange couplings clamped together (as TRICLOVER)

All couplings are sealed with an O-ring in a special groove. When both couplings and O-rings are perfectly finished, they can be called aseptic and then provide higher level of transfer cleanliness than regular hygienic couplings.

An example of aseptic DIN 11864-3 connection:



## Stainless steel hygienic couplings

### Fittings for flexible hoses, assembly options

Fittings intended for flexible hoses have an appropriate hygienic connecting part and a hose part („tail”) that matches hose type and size. The biggest problem is the design of a fitting tail which must guarantee the highest level of hygiene but prevent formation of „dead space” or a shoulder at the end of the hose tail - a place where product particles may accumulate.

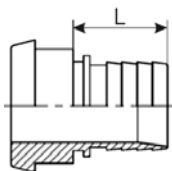
#### Assembly options:

<p>pipeline with SMS fitting Rd 70x1/6" male thread</p> <p>NH-SWK-050 fitting</p> <p>NH-SN-050 nut with Rd 70x1/6" female thread</p> <p>crimping ferrule TI-LDR-064-32-SS</p> <p>soft, thick NR rubber layer</p> <p>flexible hose IV-SCOT-LL-NR-051</p>	<p>Fittings with a serrated hose tail (NH-DWK, NH-DZK, NH-SWK, NH-SZK, NH-TCK):</p> <ul style="list-style-type: none"> <li>- for rubber and plastic hoses with soft and thick internal layer,</li> <li>- for assembly with TI-LDR, TI-LD crimping ferrules.</li> </ul>
<p>pipeline with TRICLOVER fitting A = 64 mm, d = 50 mm</p> <p>NH-TCR-050-05 fitting</p> <p>NH-TO-064 clamp</p> <p>crimping ferrule TI-LDR-064-32-SS316</p> <p>MFA polymer layer</p> <p>flexible hose MT-PHARMA-51</p>	<p>Fittings with a smooth hose tail (NH-DWR, NH-DZR, NH-SWR, NH-SZR, NH-TCR):</p> <ul style="list-style-type: none"> <li>- for rubber and plastic hoses,</li> <li>- particularly for hoses with internal layer made of rigid UPE, PTFE, FEP, MFA, PFA etc., the diameter of the hose tail must fully correspond to the internal diameter of the hose,</li> <li>- for assembly with TI-LDR, TI-LD crimping ferrules.</li> </ul>
<p>pipeline with DIN 11851 fitting Rd 78x1/6" male thread</p> <p>NH-DWR-051 fitting</p> <p>NH-DN-050 nut with Rd 78x1/6" female thread</p> <p>RS-636050008020 safety clamp</p> <p>UPE polyethylene layer</p> <p>flexible hose IV-SUPUPE-LL-051</p>	<p>Fittings with a smooth hose tail (NH-DWR, NH-DZR, NH-SWR, NH-SZR, NH-TCR):</p> <ul style="list-style-type: none"> <li>- for rubber and plastic hoses,</li> <li>- particularly for hoses with internal layer made of rigid UPE, PTFE, FEP, MFA, PFA etc., the diameter of the hose tail must fully correspond to the internal diameter of the hose,</li> <li>- for assembly with RS safety clamps.</li> </ul>
<p>pipeline with TRICLOVER fitting A = 50.5 mm, d = 32 mm</p> <p>NH-TO-050 clamp</p> <p>crimping ferrule AF-PHXT1-025</p> <p>PTFE corrugated outside</p> <p>PTFE hose AF-PHGP-25</p>	<p>Hygienic fittings for PTFE hoses (AF-PHXTC):</p> <ul style="list-style-type: none"> <li>- for PHARMALINE N, PHARMALINE X, CORROFLON, BIOFLEX PTFE hoses,</li> <li>- for assembly with ferrules intended for the hoses above.</li> </ul>
<p>pipeline with TRICLOVER fitting A = 50.5 mm, d = 32 mm</p> <p>NH-TO-050 clamp</p> <p>crimping ferrule AF-THU-16-SS</p> <p>PTFE corrugated outside</p> <p>PTFE hose AF-FXSS-25</p>	<p>Hygienic fittings for PTFE hoses (AF-FXTC):</p> <ul style="list-style-type: none"> <li>- for HYPERLINE FX, HYPERLINE SB PTFE hoses, can be used for thermoplastic and rubber hoses,</li> <li>- for assembly with ferrules intended for the hoses above.</li> </ul>

# INDUSTRIAL FITTINGS - couplings

## Stainless steel hygienic couplings

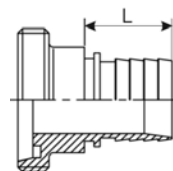
Female coupling (without nut) with serrated hose tail,  
AISI 316, Ra (inside) 0.8 µm



**DIN 11851**

code	DN	for nut	hose I.D. [mm]	L
NH-DWK-025	25	Rd 52x1/6"	25	30.7
NH-DWK-032	32	Rd 58x1/6"	32	39
NH-DWK-038	38	Rd 65x1/6"	38	39.3
NH-DWK-040	40	Rd 65x1/6"	40	39.5
NH-DWK-050	50	Rd 78x1/6"	50	48.9
NH-DWK-063	63	Rd 95x1/6"	63	61
NH-DWK-065	65	Rd 95x1/6"	65	61
NH-DWK-075	75	Rd 110x1/4"	75	67
NH-DWK-080	80	Rd 110x1/4"	80	67
NH-DWK-100	100	Rd 130x1/4"	102	68.5

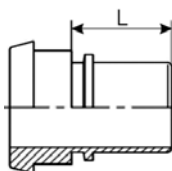
Male coupling with serrated hose tail,  
AISI 316, Ra (inside) 0.8 µm



**DIN 11851**

code	DN	thread size	hose I.D. [mm]	L
NH-DZK-025	25	Rd 52x1/6"	25	30.7
NH-DZK-032	32	Rd 58x1/6"	32	39
NH-DZK-038	38	Rd 65x1/6"	38	39.3
NH-DZK-040	40	Rd 65x1/6"	40	39.5
NH-DZK-050	50	Rd 78x1/6"	50	48.9
NH-DZK-063	63	Rd 95x1/6"	63	61
NH-DZK-065	65	Rd 95x1/6"	65	61
NH-DZK-075	75	Rd 110x1/4"	75	67
NH-DZK-080	80	Rd 110x1/4"	80	67
NH-DZK-100	100	Rd 130x1/4"	102	68.5

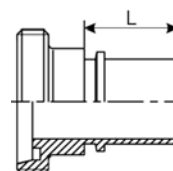
Female coupling (without nut) with hose tail  
for RS safety clamp, AISI 316, Ra (inside) 0.8 µm



**DIN 11851**

code	DN	for nut	hose I.D. [mm]	L
NH-DWR-015	15	Rd 34x1/8"	13	42
NH-DWR-020	20	Rd 44x1/6"	19	42
NH-DWR-025	25	Rd 52x1/6"	25	42
NH-DWR-032	32	Rd 58x1/6"	32	42
NH-DWR-038	38	Rd 65x1/6"	38	42
NH-DWR-040	40	Rd 65x1/6"	40	42
NH-DWR-050	50	Rd 78x1/6"	50	49
NH-DWR-063	63	Rd 95x1/6"	63	63
NH-DWR-065	65	Rd 95x1/6"	65	63
NH-DWR-075	75	Rd 110x1/4"	75	67
NH-DWR-080	80	Rd 110x1/4"	80	67
NH-DWR-100	100	Rd 130x1/4"	102	96

Male coupling with hose tail  
for RS safety clamp, AISI 316, Ra (inside) 0.8 µm



**DIN 11851**

code	DN	thread size	hose I.D. [mm]	L
NH-DZR-015	15	Rd 34x1/8"	13	42
NH-DZR-020	20	Rd 44x1/6"	19	42
NH-DZR-025	25	Rd 52x1/6"	25	42
NH-DZR-032	32	Rd 58x1/6"	32	42
NH-DZR-038	38	Rd 65x1/6"	38	42
NH-DZR-040	40	Rd 65x1/6"	40	42
NH-DZR-050	50	Rd 78x1/6"	50	49
NH-DZR-063	63	Rd 95x1/6"	63	63
NH-DZR-065	65	Rd 95x1/6"	65	63
NH-DZR-075	75	Rd 110x1/4"	75	67
NH-DZR-080	80	Rd 110x1/4"	80	67
NH-DZR-100	100	Rd 130x1/4"	102	96



# INDUSTRIAL FITTINGS - couplings

## Stainless steel hygienic couplings

Female coupling (without nut) with butt weld connection,  
AISI 316, Ra (inside) 0.8 µm



**DIN 11851**

code	DN	for nut	butt weld O.D. / I.D. [mm]
NH-DWS-010	10	Rd 28x1/8"	13 / 10
NH-DWS-015	15	Rd 34x1/8"	19 / 16
NH-DWS-020	20	Rd 44x1/6"	23 / 20
NH-DWS-025	25	Rd 52x1/6"	29 / 26
NH-DWS-032	32	Rd 58x1/6"	35 / 32
NH-DWS-040	40	Rd 65x1/6"	41 / 38
NH-DWS-050	50	Rd 78x1/6"	53 / 50
NH-DWS-065	65	Rd 95x1/6"	70 / 66
NH-DWS-080	80	Rd 110x1/4"	85 / 81
NH-DWS-100	100	Rd 130x1/4"	104 / 100
NH-DWS-125	125	Rd 160x1/4"	129 / 125
NH-DWS-150	150	Rd 190x1/4"	154 / 150

Male coupling with butt weld connection,  
AISI 316, Ra (inside) 0.8 µm



**DIN 11851**

code	DN	thread size	butt weld O.D. / I.D. [mm]
NH-DZS-010	10	Rd 28x1/8"	13 / 10
NH-DZS-015	15	Rd 34x1/8"	19 / 16
NH-DZS-020	20	Rd 44x1/6"	23 / 20
NH-DZS-025	25	Rd 52x1/6"	29 / 26
NH-DZS-032	32	Rd 58x1/6"	35 / 32
NH-DZS-040	40	Rd 65x1/6"	41 / 38
NH-DZS-050	50	Rd 78x1/6"	53 / 50
NH-DZS-065	65	Rd 95x1/6"	70 / 66
NH-DZS-080	80	Rd 110x1/4"	85 / 81
NH-DZS-100	100	Rd 130x1/4"	104 / 100
NH-DZS-125	125	Rd 160x1/4"	129 / 125
NH-DZS-150	150	Rd 190x1/4"	154 / 150

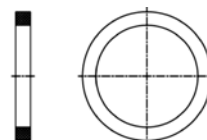
Nut, AISI 304



**DIN 11851**

code	DN	thread size
NH-DN-010	10	Rd 28x1/8"
NH-DN-015	15	Rd 34x1/8"
NH-DN-020	20	Rd 44x1/6"
NH-DN-025	25	Rd 52x1/6"
NH-DN-032	32	Rd 58x1/6"
NH-DN-040	40	Rd 65x1/6"
NH-DN-050	50	Rd 78x1/6"
NH-DN-065	65	Rd 95x1/6"
NH-DN-080	80	Rd 110x1/4"
NH-DN-100	100	Rd 130x1/4"
NH-DN-125	125	Rd 160x1/4"
NH-DN-150	150	Rd 190x1/4"

Seal



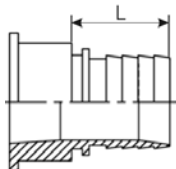
**DIN 11851**

DN	code (silicone)	code (Viton)	code (EPDM)	code (NBR)
10	NH-DUS-010	NH-DUV-010	NH-DUE-010	NH-DUN-010
15	NH-DUS-015	NH-DUV-015	NH-DUE-015	NH-DUN-015
20	NH-DUS-020	NH-DUV-020	NH-DUE-020	NH-DUN-020
25	NH-DUS-025	NH-DUV-025	NH-DUE-025	NH-DUN-025
32	NH-DUS-032	NH-DUV-032	NH-DUE-032	NH-DUN-032
40	NH-DUS-040	NH-DUV-040	NH-DUE-040	NH-DUN-040
50	NH-DUS-050	NH-DUV-050	NH-DUE-050	NH-DUN-050
65	NH-DUS-065	NH-DUV-065	NH-DUE-065	NH-DUN-065
80	NH-DUS-080	NH-DUV-080	NH-DUE-080	NH-DUN-080
100	NH-DUS-100	NH-DUV-100	NH-DUE-100	NH-DUN-100
125	NH-DUS-125	NH-DUV-125	NH-DUE-125	NH-DUN-125
150	NH-DUS-150	NH-DUV-150	NH-DUE-150	NH-DUN-150

# INDUSTRIAL FITTINGS - couplings

## Stainless steel hygienic couplings

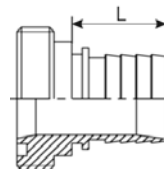
Female coupling (without nut) with serrated hose tail,  
AISI 316, Ra (inside) 0.8 µm



**SMS**

code	DN	for nut	hose I.D. [mm]	L
NH-SWK-025	25	Rd 40x1/6"	25	30.7
NH-SWK-032	32	Rd 48x1/6"	32	39
NH-SWK-038	38	Rd 60x1/6"	38	39.3
NH-SWK-050	50	Rd 70x1/6"	50	48.9
NH-SWK-063	63	Rd 85x1/6"	63	61
NH-SWK-075	75	Rd 98x1/6"	75	67
NH-SWK-100	100	Rd 132x1/6"	102	68.5

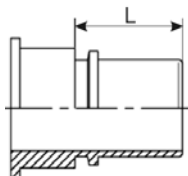
Male coupling with serrated hose tail,  
AISI 316, Ra (inside) 0.8 µm



**SMS**

code	DN	thread size	hose I.D. [mm]	L
NH-SZK-025	25	Rd 40x1/6"	25	30.7
NH-SZK-032	32	Rd 48x1/6"	32	39
NH-SZK-038	38	Rd 60x1/6"	38	39.3
NH-SZK-050	50	Rd 70x1/6"	50	48.9
NH-SZK-063	63	Rd 85x1/6"	63	61
NH-SZK-075	75	Rd 98x1/6"	75	67
NH-SZK-100	100	Rd 132x1/6"	102	68.5

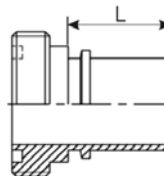
Female coupling (without nut) with hose tail  
for RS safety clamp, AISI 316, Ra (inside) 0.8 µm



**SMS**

code	DN	for nut	hose I.D. [mm]	L
NH-SWR-025	25	Rd 40x1/6"	25	42
NH-SWR-032	32	Rd 48x1/6"	32	42
NH-SWR-038	38	Rd 60x1/6"	38	42
NH-SWR-050	50	Rd 70x1/6"	51	49
NH-SWR-063	63	Rd 85x1/6"	63	63
NH-SWR-075	75	Rd 98x1/6"	75	67
NH-SWR-100	100	Rd 132x1/6"	102	96

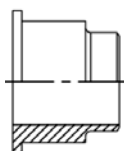
Male coupling with hose tail  
for RS safety clamp, AISI 316, Ra (inside) 0.8 µm



**SMS**

code	DN	thread size	hose I.D. [mm]	L
NH-SZR-025	25	Rd 40x1/6"	25	42
NH-SZR-032	32	Rd 48x1/6"	32	42
NH-SZR-038	38	Rd 60x1/6"	38	42
NH-SZR-050	50	Rd 70x1/6"	51	49
NH-SZR-063	63	Rd 85x1/6"	63	63
NH-SZR-075	75	Rd 98x1/6"	75	67
NH-SZR-100	100	Rd 132x1/6"	102	96

Female coupling with butt weld connection,  
AISI 316, Ra (inside) 0.8 µm



**SMS**

code	DN	for nut	butt weld O.D. / I.D. [mm]
NH-SWS-025	25	Rd 40x1/6"	25.6 / 22.6
NH-SWS-032	32	Rd 48x1/6"	32 / 29.5
NH-SWS-038	38	Rd 60x1/6"	38 / 35.5
NH-SWS-050	50	Rd 70x1/6"	51 / 48.5
NH-SWS-063	63	Rd 85x1/6"	63.5 / 60.5
NH-SWS-075	75	Rd 98x1/6"	76 / 72
NH-SWS-100	100	Rd 132x1/6"	101.6 / 97.6

Male coupling with butt weld connection,  
AISI 316, Ra (inside) 0.8 µm

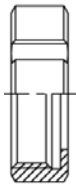


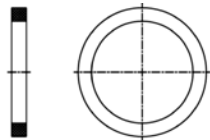
**SMS**


code	DN	thread size	butt weld O.D. / I.D. [mm]
NH-SZS-025	25	Rd 40x1/6"	25 / 22.5
NH-SZS-032	32	Rd 48x1/6"	32 / 29.5
NH-SZS-038	38	Rd 60x1/6"	38 / 35.5
NH-SZS-050	50	Rd 70x1/6"	51 / 48.5
NH-SZS-063	63	Rd 85x1/6"	63.5 / 60.5
NH-SZS-080	75	Rd 98x1/6"	76 / 72
NH-SZS-100	100	Rd 132x1/6"	101.6 / 97.6


# INDUSTRIAL FITTINGS - couplings

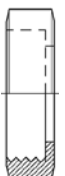
## Stainless steel hygienic couplings

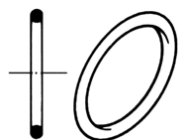
Nut, AISI 304		
		
<b>SMS</b>		
code	DN	thread size
NH-SN-025	25	Rd 40x1/6"
NH-SN-032	32	Rd 48x1/6"
NH-SN-038	38	Rd 60x1/6"
NH-SN-050	50	Rd 70x1/6"
NH-SN-063	63	Rd 85x1/6"
NH-SN-075	75	Rd 98x1/6"
NH-SN-100	100	Rd 132x1/6"

Seal				
				
<b>SMS</b>				
DN	code (PTFE)	code (Viton)	code (EPDM)	code (NBR)
25	NH-SUP-025	NH-SUV-025	NH-SUE-025	NH-SUN-025
32	NH-SUP-032	NH-SUV-032	NH-SUE-032	NH-SUN-032
40	NH-SUP-038	NH-SUV-038	NH-SUE-038	NH-SUN-038
50	NH-SUP-050	NH-SUV-050	NH-SUE-050	NH-SUN-050
65	NH-SUP-063	NH-SUV-063	NH-SUE-063	NH-SUN-063
80	NH-SUP-075	NH-SUV-075	NH-SUE-075	NH-SUN-075
100	NH-SUP-100	NH-SUV-100	NH-SUE-100	NH-SUN-100

Liner according to BS 4825-5 with butt weld connection, AISI 316			
			
<b>RJT</b>			
code	DN	for nut	butt weld O.D. / I.D. [mm]
NH-RWS-025	25	1" RJT	25.4 / 22.2
NH-RWS-040	40	1.1/2" RJT	38.1 / 34.9
NH-RWS-050	50	2" RJT	50.8 / 47.6
NH-RWS-065	65	2.1/2" RJT	63.5 / 60.3
NH-RWS-075	75	3" RJT	76.2 / 73.0
NH-RWS-100	100	4" RJT	101.6 / 97.6

Male coupling according to BS 4825-5 with butt weld connection, AISI 316			
			
<b>RJT</b>			
code	DN	thread size	butt weld O.D. / I.D. [mm]
NH-RZS-025	25	1" RJT	25.4 / 22.2
NH-RZS-040	40	1.1/2" RJT	38.1 / 34.9
NH-RZS-050	50	2" RJT	50.8 / 47.6
NH-RZS-065	65	2.1/2" RJT	63.5 / 60.3
NH-RZS-075	75	3" RJT	76.2 / 73.0
NH-RZS-100	100	4" RJT	101.6 / 97.6

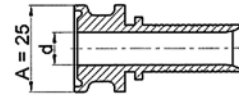
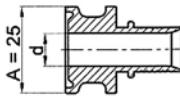
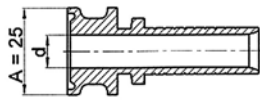
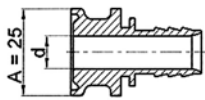
Nut according to BS 4825-5		
		
<b>RJT</b>		
code	DN	thread size
NH-RN-025	25	1" RJT
NH-RN-040	40	1.1/2" RJT
NH-RN-050	50	2" RJT
NH-RN-065	65	2.1/2" RJT
NH-RN-075	75	3" RJT
NH-RN-100	100	4" RJT

Seal according to BS 4825-5		
		
<b>RJT</b>		
DN	code (NBR)	code (EPDM)
25	NH-RUN-025	NH-RUE-025
40	NH-RUN-040	NH-RUE-040
50	NH-RUN-050	NH-RUE-050
65	NH-RUN-063	NH-RUE-063
75	NH-RUN-075	NH-RUE-075
100	NH-RUN-100	NH-RUE-100

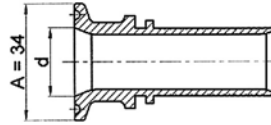
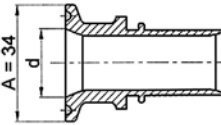
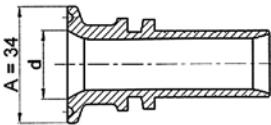
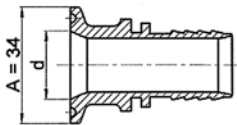
Seals made of PTFE, silicone, Viton also available.

# INDUSTRIAL FITTINGS - couplings

## Stainless steel hygienic couplings



AISI 316 steel, Ra (inside) 0.4 µm



**NH-TCK**

**NH-TCR**

**AF-PHXTC**

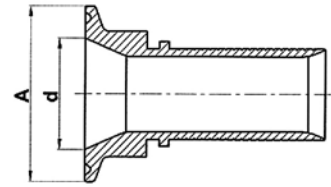
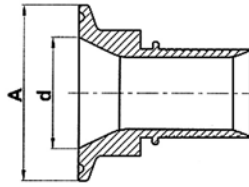
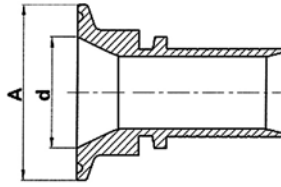
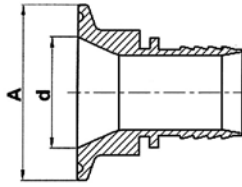
**AF-FXXTC**

A	d	comply with fittings according standards below:  DIN: DIN 32676 BS: BS-4825-3 ISO: ISO 2852	hose DN		NH-TCK	NH-TCR	AF-PHXTC	AF-FXXTC
					hose type			
					rubber hoses	rubber hoses, plastic hoses, rubber hoses with internal layer made of UPE, PTFE, FEP, MFA, PFA	PTFE hoses PHARMALINE N, PHARMALINE X, CORROFLON, BIOFLEX	PTFE hoses HYPERLINE FX, HYPERLINE SB, thermoplastic hoses, rubber hoses
					assembled with			
					TI-LD, TI-LDR ferrules	TI-LR, TI-LDR ferrules or RS safety clamps	ferrules for above mentioned hoses	AF-THU ferrules for PTFE hoses, TI-L ferrules for rubber hoses, ferrules for thermoplastic hoses.
[mm]	[mm]	-	[inch]	[mm]	code	code	code	code
25	4	DIN-A*	1/4"	6	-	-	AF-PHXTC-025-04-006	AF-FXXTC-025-04-006
25	4.57	DIN-C	1/4"	6	-	-	AF-PHXTC-025-05-006	AF-FXXTC-025-05-006
25	6	DIN-A	5/16"	8	-	-	-	AF-FXXTC-025-06-008
25	7	DIN-B	3/8"	10	-	-	AF-PHXTC-025-07B-010	AF-FXXTC-025-07B-010
25	7.75	DIN-C	3/8"	10	-	-	AF-PHXTC-025-07-010	AF-FXXTC-025-07-010
25	8	DIN-A	3/8"	10	-	-	AF-PHXTC-025-08-010	AF-FXXTC-025-08-010
25	9.4	BS / DIN-C	1/4"	6	-	-	AF-PHXTC-025-09-006	AF-FXXTC-025-09-006
25	9.4	BS / DIN-C	3/8"	10	-	-	AF-PHXTC-025-09-010	AF-FXXTC-025-09-010
25	9.4	BS / DIN-C	1/2"	13	NH-TCK-025-09-013	NH-TCR-025-09-013	AF-PHXTC-025-09-013	AF-FXXTC-025-09-013
25	10	DIN-A*	1/2"	13	NH-TCK-025-10-013	NH-TCR-025-10-013	AF-PHXTC-025-10-013	AF-FXXTC-025-10-013
25	10.3	DIN-B	1/2"	13	NH-TCK-025-11-013	NH-TCR-025-11-013	AF-PHXTC-025-11-013	AF-FXXTC-025-11-013
25	12	DIN-A*	1/2"	13	NH-TCK-025-12-013	NH-TCR-025-12-013	AF-PHXTC-025-12-013	AF-FXXTC-025-12-013
25	14	DIN-A* / DIN-B	1/2"	13	NH-TCK-025-14-013	NH-TCR-025-14-013	AF-PHXTC-025-14-013	AF-FXXTC-025-14-013
25	15.75	BS / DIN-C	1/2"	13	NH-TCK-025-15-013	NH-TCR-025-15-013	AF-PHXTC-025-15-013	AF-FXXTC-025-15-013
25	15.75	BS / DIN-C	5/8"	16	-NH-TCK-025-15-016	-	AF-PHXTC-025-15-016	AF-FXXTC-025-15-016
25	15.75	BS / DIN-C	3/4"	19	NH-TCK-025-15-019	NH-TCR-025-15-019	AF-PHXTC-025-15-019	AF-FXXTC-025-15-019
25	16	DIN-A*	3/4"	19	NH-TCK-025-16-019	NH-TCR-025-16-019	AF-PHXTC-025-16-019	AF-FXXTC-025-16-019
34	10	ISO / DIN-A	3/8"	10	-	-	AF-PHXTC-034-10-010	AF-FXXTC-034-10-010
34	10	ISO / DIN-A	1/2"	13	NH-TCK-034-10-013	NH-TCR-034-10-013	AF-PHXTC-034-10-013	AF-FXXTC-034-10-013
34	10.3	DIN-B	3/8"	10	-	-	AF-PHXTC-034-10B-010	AF-FXXTC-034-10B-010
34	10.3	DIN-B	1/2"	13	NH-TCK-034-10B-013	NH-TCR-034-10B-013	AF-PHXTC-034-10B-013	AF-FXXTC-034-10B-013
34	10.7	ISO	1/2"	13	NH-TCK-034-11-013	NH-TCR-034-11-013	AF-PHXTC-034-11-013	AF-FXXTC-034-11-013
34	14	DIN-A*	1/2"	13	NH-TCK-034-14-013	NH-TCR-034-14-013	AF-PHXTC-034-14-013	AF-FXXTC-034-14-013
34	14	DIN-A*	5/8"	16	NH-TCK-034-14-016	-	AF-PHXTC-034-14-016	AF-FXXTC-034-14-016
34	15.2	ISO	5/8"	16	NH-TCK-034-15-016	-	AF-PHXTC-034-15-016	AF-FXXTC-034-15-016
34	15.2	ISO	3/4"	19	NH-TCK-034-15-019	NH-TCR-034-15-019	AF-PHXTC-034-15-019	AF-FXXTC-034-15-019
34	16	DIN-A	5/8"	16	NH-TCK-034-16-016	-	AF-PHXTC-034-16-016	AF-FXXTC-034-16-016
34	16	DIN-A	3/4"	19	NH-TCK-034-16-019	NH-TCR-034-16-019	AF-PHXTC-034-16-019	AF-FXXTC-034-16-019
34	18.1	DIN-B	5/8"	16	NH-TCK-034-18-016	-	AF-PHXTC-034-18-016	AF-FXXTC-034-18-016
34	18.1	DIN-B	3/4"	19	NH-TCK-034-18-019	NH-TCR-034-18-019	AF-PHXTC-034-18-019	AF-FXXTC-034-18-019
34	19.3	ISO	5/8"	16	NH-TCK-034-19-016	-	AF-PHXTC-034-19-016	AF-FXXTC-034-19-016
34	19.3	ISO	3/4"	19	NH-TCK-034-19-019	NH-TCR-034-19-019	AF-PHXTC-034-19-019	AF-FXXTC-034-19-019
34	20	DIN-A	5/8"	16	NH-TCK-034-20-016	-	AF-PHXTC-034-20-016	AF-FXXTC-034-20-016
34	20	DIN-A	3/4"	19	NH-TCK-034-20-019	NH-TCR-034-20-019	AF-PHXTC-034-20-019	AF-FXXTC-034-20-019

# INDUSTRIAL FITTINGS - couplings

## Stainless steel hygienic couplings

AISI 316 steel, Ra (inside) 0.4 µm



**NH-TCK**

**NH-TCR**

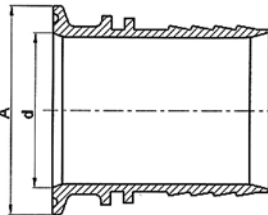
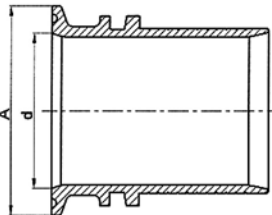
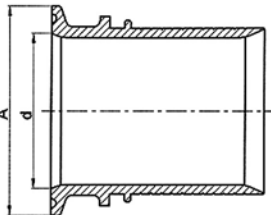
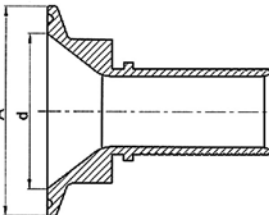
**AF-PHXTC**

**AF-FXXTC**

A	d	comply with fittings according standards below:  DIN: DIN 32676 BS: BS-4825-3 ISO: ISO 2852	hose DN		NH-TCK	NH-TCR	AF-PHXTC	AF-FXXTC
					hose type			
					rubber hoses	rubber hoses, plastic hoses, rubber hoses with internal layer made of UPE, PTFE, FEP, MFA, PFA	PTFE hoses PHARMALINE N, PHARMALINE X, CORROFLON, BIOFLEX	PTFE hoses HYPERLINE FX, HYPERLINE SB, thermoplastic hoses, rubber hoses
					assembled with			
					TI-LD, TI-LDR ferrules	TI-LR, TI-LDR ferrules or RS safety clamps	ferrules for above mentioned hoses	AF-THU ferrules for PTFE hoses, TI-L ferrules for rubber hoses, ferrules for thermoplastic hoses.
[mm]	[mm]	-	[inch]	[mm]	code	code	code	code
50.5	9.4	BS / DIN-C	1/2"	13	NH-TCK-050-09-013	NH-TCR-050-09-013	AF-PHXTC-050-09-013	AF-FXXTC-050-09-013
50.5	15.75	BS / DIN-C	3/4"	19	NH-TCK-050-15-019	NH-TCR-050-15-019	AF-PHXTC-050-15-019	AF-FXXTC-050-15-019
50.5	18.1	DIN-B	3/4"	19	NH-TCK-050-18-019	NH-TCR-050-18-019	AF-PHXTC-050-18-019	AF-FXXTC-050-18-019
50.5	22.1	BS / DIN-C	1/2"	13	NH-TCK-050-22-013	NH-TCR-050-22-013	AF-PHXTC-050-22-013	AF-FXXTC-050-22-013
50.5	22.1	BS / DIN-C	5/8"	16	NH-TCK-050-22-016	-	AF-PHXTC-050-22-016	AF-FXXTC-050-22-016
50.5	22.1	BS / DIN-C	3/4"	19	NH-TCK-050-22-019	NH-TCR-050-22-019	AF-PHXTC-050-22-019	AF-FXXTC-050-22-019
50.5	22.1	BS / DIN-C	1"	25	NH-TCK-050-22-025	NH-TCR-050-22-025	AF-PHXTC-050-22-025	AF-FXXTC-050-22-025
50.5	22.6	ISO	1"	25	NH-TCK-050-23-025	NH-TCR-050-23-025	AF-PHXTC-050-23-025	AF-FXXTC-050-23-025
50.5	23.7	DIN-B	3/4"	19	NH-TCK-050-24-019	NH-TCR-050-24-019	AF-PHXTC-050-24-019	AF-FXXTC-050-24-019
50.5	23.7	DIN-B	1"	25	NH-TCK-050-24-025	NH-TCR-050-24-025	AF-PHXTC-050-24-025	AF-FXXTC-050-24-025
50.5	26	DIN-A	5/8"	16	NH-TCK-050-26-016	-	AF-PHXTC-050-26-016	AF-FXXTC-050-26-016
50.5	26	DIN-A	3/4"	19	NH-TCK-050-26-019	NH-TCR-050-26-019	AF-PHXTC-050-26-019	AF-FXXTC-050-26-019
50.5	26	DIN-A	1"	25	NH-TCK-050-26-025	NH-TCR-050-26-025	AF-PHXTC-050-26-025	AF-FXXTC-050-26-025
50.5	29.7	DIN-B	3/4"	19	NH-TCK-050-30-019	NH-TCR-050-30-019	AF-PHXTC-050-30-019	AF-FXXTC-050-30-019
50.5	29.7	DIN-B	1"	25	NH-TCK-050-30-025	NH-TCR-050-30-025	AF-PHXTC-050-30-025	AF-FXXTC-050-30-025
50.5	29.7	DIN-B	1.1/4"	32	NH-TCK-050-30-032	NH-TCR-050-30-032	AF-PHXTC-050-30-032	-
50.5	31.3	ISO	1"	25	NH-TCK-050-31-025	NH-TCR-050-31-025	AF-PHXTC-050-31-025	AF-FXXTC-050-31-025
50.5	31.3	ISO	1.1/4"	32	NH-TCK-050-31-032	NH-TCR-050-31-032	AF-PHXTC-050-31-032	-
50.5	32	DIN-A	3/4"	19	NH-TCK-050-32-019	NH-TCR-050-32-019	AF-PHXTC-050-32-019	AF-FXXTC-050-32-019
50.5	32	DIN-A	1"	25	NH-TCK-050-32-025	NH-TCR-050-32-025	AF-PHXTC-050-32-025	AF-FXXTC-050-32-025
50.5	32	DIN-A	1.1/4"	32	NH-TCK-050-32-032	NH-TCR-050-32-032	AF-PHXTC-050-32-032	-
50.5	34.8	BS / DIN-C	3/4"	19	NH-TCK-050-35-019	NH-TCR-050-35-019	AF-PHXTC-050-35-019	AF-FXXTC-050-35-019
50.5	34.8	BS / DIN-C	1"	25	NH-TCK-050-35-025	NH-TCR-050-35-025	AF-PHXTC-050-35-025	AF-FXXTC-050-35-025
50.5	34.8	BS / DIN-C	1.1/4"	32	NH-TCK-050-35-032	NH-TCR-050-35-032	AF-PHXTC-050-35-032	-
50.5	34.8	BS / DIN-C	1.1/2"	38	NH-TCK-050-35-038	NH-TCR-050-35-038	AF-PHXTC-050-35-038	-
50.5	34.8	BS / DIN-C	-	40		NH-TCR-050-35-040	-	-
50.5	35.6	ISO	1.1/2"	38	NH-TCK-050-36-038	NH-TCR-050-36-038	AF-PHXTC-050-36-038	-
50.5	38	DIN-A	3/4"	19	NH-TCK-050-38-019	NH-TCR-050-38-019	AF-PHXTC-050-38-019	AF-FXXTC-050-38-019
50.5	38	DIN-A	1"	25	NH-TCK-050-38-025	NH-TCR-050-38-025	AF-PHXTC-050-38-025	AF-FXXTC-050-38-025
50.5	38	DIN-A	1.1/4"	32	NH-TCK-050-38-032	NH-TCR-050-38-032	AF-PHXTC-050-38-032	-
50.5	38	DIN-A	1.1/2"	38	NH-TCK-050-38-038	NH-TCR-050-38-038	AF-PHXTC-050-38-038	-
50.5	38	DIN-A	-	40		NH-TCR-050-38-040	-	-
50.5	38.4	DIN-B	1.1/4"	32	NH-TCK-050-38B-032	NH-TCR-050-38B-032	AF-PHXTC-050-38B-032	-
50.5	38.4	DIN-B	1.1/2"	38	NH-TCK-050-38B-038	NH-TCR-050-38B-038	AF-PHXTC-050-38B-038	-

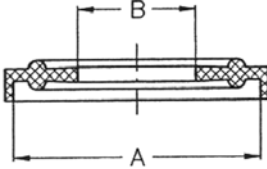
# INDUSTRIAL FITTINGS - couplings


## Stainless steel hygienic couplings

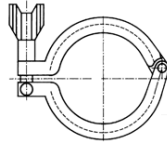
AISI 316 steel, Ra (inside) 0.4 µm																						
																						
NH-TCK					NH-TCR					AF-PHXTC					AF-FXXTC							
A	d	comply with fittings according standards below:  DIN: DIN 32676 BS: BS 4825-3 ISO: ISO 2852			hose DN																	
							NH-TCK				NH-TCR				AF-PHXTC				AF-FXXTC			
							hose type															
							rubber hoses				rubber hoses, plastic hoses, rubber hoses with internal layer made of UPE, PTFE, FEP, MFA, PFA				PTFE hoses PHARMALINE N, PHARMALINE X, CORROFLON, BIOFLEX				PTFE hoses HYPERLINE FX, HYPERLINE SB, thermoplastic hoses, rubber hoses			
							assembled with															
TI-LD, TI-LDR ferrules				TI-LR, TI-LDR ferrules or RS safety clamps				ferrules for above mentioned hoses				AF-THU ferrules for PTFE hoses, TI-L ferrules for rubber hoses, ferrules for thermoplastic hoses.										
[mm]	[mm]	-	[inch]	[mm]	code		code		code		code											
64	37.6	ISO	1.1/2"	38	NH-TCK-064-37-038		NH-TCR-064-37-038		AF-PHXTC-064-37-038		-											
64	38.4	DIN-B	1.1/2"	38	NH-TCK-064-38-038		NH-TCR-064-38-038		AF-PHXTC-064-38-038		-											
64	44.3	DIN-B	1.1/2"	38	NH-TCK-064-44-038		NH-TCR-064-44-038		AF-PHXTC-064-44-038		-											
64	47.5	DIN-C / BS	1"	25	NH-TCK-064-48-025		NH-TCR-064-48-025		AF-PHXTC-064-48-025		AF-FXXTC-064-48-025											
64	47.5	DIN-C / BS	1.1/4"	32	NH-TCK-064-48-032		NH-TCR-064-48-032		AF-PHXTC-064-48-032		-											
64	47.5	DIN-C / BS	1.1/2"	38	NH-TCK-064-48-038		NH-TCR-064-48-038		AF-PHXTC-064-48-038		-											
64	47.5	DIN-C / BS	2"	50	NH-TCK-064-48-050		NH-TCR-064-48-050		-		-											
64	47.5	DIN-C / BS	2"	51			NH-TCR-064-48-051		AF-PHXTC-064-48-051		-											
64	48.6	ISO	2"	50	NH-TCK-064-49-050		NH-TCR-064-49-050		-		-											
64	48.6	ISO	2"	51			NH-TCR-064-49-051		AF-PHXTC-064-49-051		-											
64	50	DIN-A	1.1/2"	38	NH-TCK-064-50-038		NH-TCR-064-50-038		AF-PHXTC-064-50-038		-											
64	50	DIN-A	-	40	NH-TCK-064-50-050		NH-TCR-064-50-040		-		-											
64	50	DIN-A	2"	50			NH-TCR-064-50-050		-		-											
64	50	DIN-A	2"	51			NH-TCR-064-50-051		AF-PHXTC-064-50-051		-											
77.5	56.3	DIN-B	2"	51	NH-TCK-077-56-050		NH-TCR-077-56-051		AF-PHXTC-077-56-051		-											
77.5	56.3	DIN-B	2.1/2"	63	NH-TCK-077-56-063		NH-TCR-077-56-063		AF-CFXTC-077-56-063		-											
77.5	60.3	BS / DIN-C / ISO	2"	50	NH-TCK-077-60-050		NH-TCR-077-60-050		-		-											
77.5	60.3	BS / DIN-C / ISO	2"	51			NH-TCR-077-60-051		AF-PHXTC-077-60-051		-											
77.5	60.3	BS / DIN-C / ISO	2.1/2"	63	NH-TCK-077-60-063		NH-TCR-077-60-063		AF-CFXTC-077-60-063		-											
77.5	60.3	BS / DIN-C / ISO	2.1/2"	65			NH-TCR-077-60-065		-		-											
91	66	DIN-A	2.1/2"	63	NH-TCK-091-66-063		NH-TCR-091-66-063		-		-											
91	66.8	ISO	2.1/2"	63	NH-TCK-091-67-063		NH-TCR-091-67-063		AF-CFXTC-091-67-063		-											
91	66.8	ISO	2.1/2"	65			NH-TCR-091-67-065		-		-											
91	72.1	DIN-B	2.1/2"	63	NH-TCK-091-72-063		NH-TCR-091-72-063		AF-CFXTC-091-72-063		-											
91	72.1	DIN-B	3"	75	NH-TCK-091-72-075		NH-TCR-091-72-075		-		-											
91	72.1	DIN-B	3"	76			NH-TCR-091-72-076		AF-CFXTC-091-72-076		-											
91	73	BS / DIN-C / ISO	2"	51	NH-TCK-091-73-050		NH-TCR-091-73-051		AF-PHXTC-091-73-051		-											
91	73	BS / DIN-C / ISO	2.1/2"	63	NH-TCK-091-73-063		NH-TCR-091-73-063		AF-CFXTC-091-73-063		-											
91	73	BS / DIN-C / ISO	3"	75	NH-TCK-091-73-075		NH-TCR-091-73-075		-		-											
91	73	BS / DIN-C / ISO	3"	76			NH-TCR-091-73-076		AF-CFXTC-091-73-076		-											
106	81	DIN-A	3"	76	NH-TCK-106-81-075		NH-TCR-106-81-076		AF-CFXTC-106-81-076		-											
106	84.3	DIN-B	3"	76	NH-TCK-106-84-075		NH-TCR-106-84-076		AF-CFXTC-106-84-076		-											
106	84.9	ISO	3"	76	NH-TCK-106-85-075		NH-TCR-106-85-076		AF-CFXTC-106-85-076		-											
119	97.6	BS / DIN-C / ISO	4"	100	NH-TCK-119-98-100		NH-TCR-119-98-100		-		-											
119	97.6	BS / DIN-C / ISO	4"	102			NH-TCR-119-98-102		AF-CFXTC-119-98-102		-											
119	100	DIN-A	4"	102	NH-TCK-119-100-100		NH-TCR-119-100-102		AF-CFXTC-119-100-102		-											
130	110.3	BS / DIN-C / ISO	4"	102	NH-TCK-130-110-100		NH-TCR-130-110-102		AF-CFXTC-130-110-102		-											


# INDUSTRIAL FITTINGS - couplings

## Stainless steel hygienic couplings

Seal (DIN 32676)							
						<b>TRICLOVER</b>	
DN	A [mm]	B [mm]	code (PTFE)	code (Viton)	code (EPDM)	code (NBR)	code (silicone)
10	34	10.2	NH-TUP-034-010	NH-TUV-034-010	NH-TUE-034-010	NH-TUN-034-010	NH-TUS-034-010
15	34	16.2	NH-TUP-034-015	NH-TUV-034-015	NH-TUE-034-015	NH-TUN-034-015	NH-TUS-034-015
20	34	20.2	NH-TUP-034-020	NH-TUV-034-020	NH-TUE-034-020	NH-TUN-034-020	NH-TUS-034-020
25	50.5	26.2	NH-TUP-050-025	NH-TUV-050-025	NH-TUE-050-025	NH-TUN-050-025	NH-TUS-050-025
32	50.5	32.2	NH-TUP-050-032	NH-TUV-050-032	NH-TUE-050-032	NH-TUN-050-032	NH-TUS-050-032
38	50.5	38.2	NH-TUP-050-038	NH-TUV-050-038	NH-TUE-050-038	NH-TUN-050-038	NH-TUS-050-038
50	64	50.2	NH-TUP-064-050	NH-TUV-064-050	NH-TUE-064-050	NH-TUN-064-050	NH-TUS-064-050


TC coupling according to DIN 32676 with butt weld connection, AISI 316			
			
		<b>TRICLOVER</b>	
code	DN	flange O.D. [mm]	butt weld O.D. / I.D. [mm]
NH-TKS-034-010	10	34	13 / 10
NH-TKS-034-015	15	34	19 / 16
NH-TKS-034-020	20	34	23 / 20
NH-TKS-050-025	25	50.5	29 / 26
NH-TKS-050-032	32	50.5	35 / 32
NH-TKS-050-038	38	50.5	41 / 38
NH-TKS-064-050	50	64	53 / 50

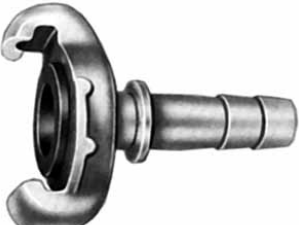
Clamp AISI 304	
	
<b>TRICLOVER</b>	
code	flange O.D. [mm]
NH-TO-025	25
NH-TO-034	34
NH-TO-050	50.5
NH-TO-064	64
NH-TO-077	77.5
NH-TO-091	91
NH-TO-106	106
NH-TO-119	119
NH-TO-130	130

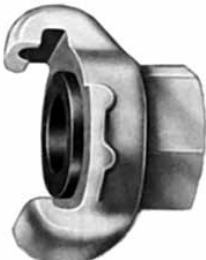
End cap, AISI 316		
		
		<b>TRICLOVER</b>
code	flange O.D. [mm]	thickness [mm]
NH-TZ-025	25	4.75
NH-TZ-034	34	6.35
NH-TZ-050	50.5	6.35
NH-TZ-064	64	6.35
NH-TZ-091	91	6.35
NH-TZ-106	106	6.35
NH-TZ-119	119	8


## INDUSTRIAL FITTINGS - couplings


### Claw couplings PN 10 bar, lug distance 42 mm, zinc-plated cast iron

	code	hose I.D. [mm]	lug distance [mm]	description
	MU-701	6	42	Coupling according to DIN 3483/3489 with hose tail. Material: zinc-plated cast iron. Seal: oil-resistant rubber. Working press.: 10 bar.
	MU-702	8	42	
	MU-703	10	42	
	MU-704	13	42	
	MU-705	15	42	
	MU-706	19	42	
	MU-707	25	42	
	MU-708	32	42	

	code	hose I.D. [mm]	lug distance [mm]	description
	MU-801	13	42	Coupling with hose tail and retaining collar. Material: zinc-plated cast iron. Seal: oil-resistant rubber. Working press.: 10 bar.
	MU-802	15	42	
	MU-803	19	42	
	MU-804	25	42	

	code	thread size [inch]	lug distance [mm]	description
	MU-901	1/4	42	Coupling according to DIN 3482/3489 and female thread. Material: zinc-plated cast iron. Seal: oil-resistant rubber. Working press.: 10 bar.
	MU-902	3/8	42	
	MU-903	1/2	42	
	MU-904	3/4	42	
	MU-905	1	42	
	MU-907	1.1/4	42	


	code	thread size [inch]	lug distance [mm]	description
	MU-1001	1/4	42	Coupling according to DIN 3481/3489 and male taper thread. Material: zinc-plated cast iron. Seal: oil-resistant rubber. Working press.: 10 bar.
	MU-1002	3/8	42	
	MU-1003	1/2	42	
	MU-1004	3/4	42	
	MU-1005	1	42	
	MU-1006	1.1/4	42	


	code	version	lug distance [mm]	description
	MU-1101	without chain	42	Blank cap according to DIN 3484/3489. Material: zinc-plated cast iron. Seal: oil-resistant rubber. Working press.: 10 bar.
	MU-1102	with chain	42	





## INDUSTRIAL FITTINGS - couplings


### Claw couplings PN 10 bar, lug distance 42 mm, zinc-plated cast iron

	code	hose I.D. [mm]	lug distance [mm]	description
	MU-864	13	42	Coupling with hose tail, retaining collar and holes for retaining pins. Material: zinc-plated cast iron. Seal: oil-resistant rubber. Working press.: 10 bar.
	MU-866	19	42	
	MU-867	25	42	

	code	thread size [inch]	lug distance [mm]	description
	MU-963	1/2	42	Coupling with female thread and holes for retaining pins. Material: zinc-plated cast iron. Seal: oil-resistant rubber. Working press.: 10 bar.
	MU-964	3/4	42	
	MU-965	1	42	

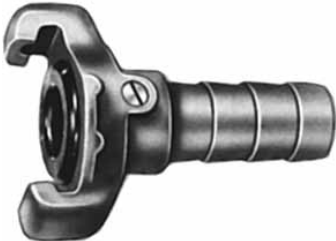
	code	thread size [inch]	lug distance [mm]	description
	MU-1063	1/2	42	Coupling with male taper thread and holes for retaining pins. Material: zinc-plated cast iron. Seal: oil-resistant rubber. Working press.: 10 bar.
	MU-1064	3/4	42	
	MU-1065	1	42	


	code	thread size [inch]	version	description
	MU-1150	3/4	-	Tee with female thread (with or without claw couplings). Material: zinc-plated cast iron. Working press.: 10 bar.
	MU-1151	3/4	3 x MU-1004	
	MU-1171	3/4	3 x MU-1054	
	MU-1160	1	-	
	MU-1161	1	3 x MU-1005	
	MU-1181	1	3 x MU-1055	


	code	description
	MU-1601	Oil-resistant rubber gasket. (NBR), temp. from -20°C up to +100°C.
	MU-1607	Steam-resistant gasket (silicone), temp. from -50°C up to +140°C
	MU-1609	Retaining pin.


## INDUSTRIAL FITTINGS - couplings

### Claw couplings PN 10 bar, lug distance 42 mm, zinc-plated cast iron

	code	hose I.D. [mm]	lug distance [mm]	description
	MU-754	13	42	Coupling with hose tail. Material: zinc-plated cast iron. Seal: brass with oil-resistant rubber ring. Working press.: 10 bar.
	MU-755	15	42	
	MU-756	19	42	
	MU-757	25	42	


	code	thread size [inch]	lug distance [mm]	description
	MU-953	1/2	42	Coupling with female thread. Material: zinc-plated cast iron. Seal: brass with oil-resistant rubber ring. Working press.: 10 bar.
	MU-954	3/4	42	
	MU-955	1	42	
	MU-956	Rd 32x1/8	42	


	code	thread size [inch]	lug distance [mm]	description
	MU-1053	1/2	42	Coupling with male taper thread. Material: zinc-plated cast iron. Seal: brass with oil-resistant rubber ring. Working press.: 10 bar.
	MU-1054	3/4	42	
	MU-1055	1	42	


	code	description
	MU-1604	Oil-resistant rubber ring (NBR).
	MU-1603	Brass gasket.
	MU-1605	Retaining screw M5x13.


## INDUSTRIAL FITTINGS - couplings


### Claw couplings PN 16 bar, lug distance 42 mm, zinc-plated cast iron

	code	hose I.D. [mm]	lug distance [mm]	description
	MU-1753	10	42	Coupling according to DIN 3238 with retaining ring and hose tail. Material: zinc-plated cast iron. Seal: oil-resistant rubber. Working press.: 16 bar.
	MU-1754	13	42	
	MU-1755	15	42	
	MU-1756	19	42	
	MU-1757	25	42	

	code	hose I.D. [mm]	lug distance [mm]	description
	MU-10077	19	42	Coupling with retaining ring (for crimping). Material: zinc-plated cast iron. Seal: oil-resistant rubber. Working press.: 16 bar.


	code	thread size [inch]	lug distance [mm]	description
	MU-1762	3/8	42	Coupling according to DIN 3238, with retaining ring and female thread. Material: zinc-plated cast iron. Seal: oil-resistant rubber. Working press.: 16 bar.
	MU-1763	1/2	42	
	MU-1764	3/4	42	
	MU-1765	1	42	


	code	thread size [inch]	lug distance [mm]	description
	MU-1772	3/8	42	Coupling according to DIN 3238, retaining ring and male taper thread. Material: zinc-plated cast iron. Seal: oil-resistant rubber. Working press.: 16 bar.
	MU-1773	1/2	42	
	MU-1774	3/4	42	
	MU-1775	1	42	


	code	nazwa	O.D. [mm]	height [mm]	description
	MU-1606	oil-resistant rubber gasket	33	7	Spare parts to couplings according to DIN 3238.  * according to new standard
	MU-1610*	oil-resistant rubber gasket	30	4	
	MU-1616	steam-resistant gasket	33	7	
	MU-1611*	steam-resistant gasket	30	4	


## INDUSTRIAL FITTINGS - couplings


### Claw couplings PN 10 bar, lug distance 42 mm, brass

	code	hose I.D. [mm]	lug distance [mm]	description
	MU-1203	10	42	Coupling with hose tail and retaining collar. Material: brass. Seal: oil-resistant rubber. Working press.: 10 bar.
	MU-1204	13	42	
	MU-1205	15	42	
	MU-1206	19	42	
	MU-1207	25	42	

	code	thread size [inch]	lug distance [mm]	description
	MU-1223	3/8	42	Coupling with female thread. Material: brass. Seal: oil-resistant rubber. Working press.: 10 bar.
	MU-1224	1/2	42	
	MU-1226	3/4	42	
	MU-1227	1	42	


	code	thread size [inch]	lug distance [mm]	description
	MU-1213	3/8	42	Coupling with male thread. Material: brass. Seal: oil-resistant rubber. Working press.: 10 bar.
	MU-1214	1/2	42	
	MU-1216	3/4	42	
	MU-1217	1	42	


	code	lug distance [mm]	description
	MU-1231	42	Blank cap. Material: brass. Seal: oil-resistant rubber. Working press.: 10 bar.


	code	description
	MU-1601	Oil-resistant rubber gasket (NBR), temp. from -20°C up to +100°C.
	MU-1607	Steam-resistant silicone gasket (silicone), temp. from -50°C up to +140°C.


## INDUSTRIAL FITTINGS - couplings



### Claw couplings PN 16 bar, lug distance 42 mm, AISI 316

	code	hose I.D. [mm]	lug distance [mm]	description
	MU-600	10	42	Coupling according to DIN 3489 with hose tail. Material: AISI 316. Seal: Viton (EPDM is optional). Working temp.: -30°C up to +200°C. Working press.: 16 bar.
	MU-601	13	42	
	MU-602	19	42	
	MU-603	25	42	

	code	thread size [inch]	lug distance [mm]	description
	MU-610	3/8	42	Coupling according to DIN 3489 with female thread. Material: AISI 316. Seal: Viton (EPDM is optional). Working temp.: -30°C up to +200°C. Working press.: 16 bar.
	MU-611	1/2	42	
	MU-612	3/4	42	
	MU-613	1	42	

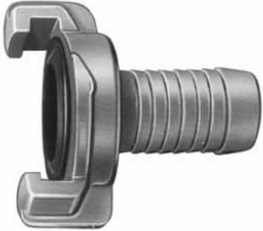
	code	thread size [inch]	lug distance [mm]	description
	MU-621	1/2	42	Coupling according to DIN 3489 with male thread. Material: AISI 316. Seal: Viton (EPDM is optional). Working temp.: -30°C up to +200°C. Working press.: 16 bar.
	MU-622	3/4	42	
	MU-623	1	42	


	code	version	lug distance [mm]	description
	MU-638	without chain	42	Blank cap according to DIN 3489. Material: AISI 316. Seal: Viton (EPDM is optional). Working temp.: -30°C up to +200°C. Working press.: 16 bar.
	MU-639	with chain	42	


 	code	description
	MU-699	Viton seal (petrochemical industry). Working temp.: from -30°C up to +200°C.
	MU-698	EPDM seal (food industry). Working temp.: from -40°C up to +130°C
	MU-110200	Safety chain for blank cap.


## INDUSTRIAL FITTINGS - couplings

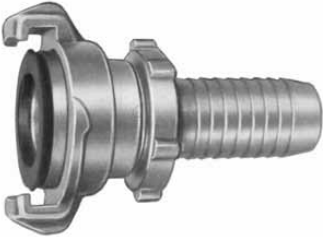
### Claw couplings PN 16 bar, lug distance 40 mm, brass

	code	hose I.D. [mm]	lug distance [mm]	description  Coupling with hose tail. Material: brass. Seal: NBR. Working temp.: -10°C up to +66°C. Working press.: 16 bar.
	MU-5003	10	40	
	MU-5004	13	40	
	MU-5005	16	40	
	MU-5006	19	40	
	MU-5007	25	40	
	MU-5008	32	40	
	MU-5009	38	40	

	code	thread size [inch]	lug distance [mm]	description  Coupling with female thread. Material: brass. Seal: NBR. Working temp.: -10°C up to +66°C. Working press.: 16 bar.
	MU-5101	1/4	40	
	MU-5102	3/8	40	
	MU-5103	1/2	40	
	MU-5105	3/4	40	
	MU-5107	1	40	
	MU-5108	1.1/4	40	
	MU-5109	1.1/2	40	


	code	thread size [inch]	lug distance [mm]	description  Coupling with male thread. Material: brass. Seal: NBR. Working temp.: -10°C up to +66°C. Working press.: 16 bar.
	MU-5201	1/4	40	
	MU-5202	3/8	40	
	MU-5203	1/2	40	
	MU-5204	3/4	40	
	MU-5205	1	40	
	MU-5206	1.1/4	40	
	MU-5207	1.1/2	40	


	code	lug distance [mm]	description  Blank cap. Material: brass. Seal: NBR. Working temp.: -10°C up to +66°C. Working press.: 16 bar.
	MU-5300	40	


	code	hose I.D. [mm]	lug distance [mm]	description  Coupling with hose tail and retaining ring. Material: brass. Seal: NBR. Working temp.: -10°C up to +66°C. Working press.: 16 bar.
	MU-5304	13	40	
	MU-5306	19	40	
	MU-5307	25	40	
	MU-5308	32	40	

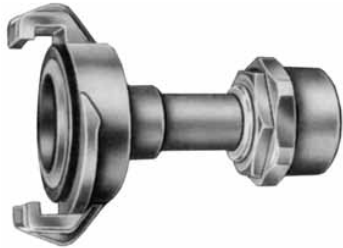
## INDUSTRIAL FITTINGS - couplings


### Claw couplings PN 16 bar, lug distance 40 mm, brass

	code	hose I.D. [mm]	lug distance [mm]	description
	MU-5364	13	40	360° axial swivelling coupling with hose tail. Material: brass. Seal: NBR. Working temp.: -10°C up to +66°C. Working press.: 16 bar.
	MU-5366	19	40	
	MU-5367	25	40	

	code	lug distance [mm]	version	description
	MU-5208	40	with couplings	Tee with 3/4" thread (1x female thread 2x male thread). Material: brass. Working press.: 10 bar.
	MU-5209	-	without couplings	

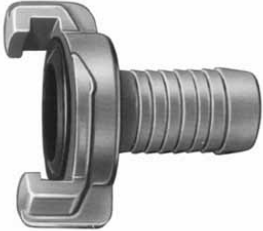
	code	name	description
	MU-1608	NBR seal	For MU-5003 - 5367 couplings.
	MU-1613	NBR seal	For MU-5304 - 5308 couplings.


	code	size [inch]	lug distance [mm]	description
	MU-5320	1/2	40	Adjustable hose nozzle with claw connection. Material: brass. Seal: NBR. Working temp.: -10°C up to +66°C. Working press.: 10 bar.
	MU-5321	3/4	40	
	MU-5322	1	40	


	code	hose I.D. [mm]	description
	MU-5310	13	Adjustable hose nozzle (with flow shut-off).
	MU-5311	19	
	MU-5315	13	Adjustable hose nozzle.
	MU-5316	19	


## INDUSTRIAL FITTINGS - couplings


### Claw couplings PN 16 bar, lug distance 40 mm, AISI 316

	code	hose I.D. [mm]	lug distance [mm]	description
	MU-6004	13	40	Coupling with hose tail. Material: AISI 316. Seal: Viton. Working press.: 16 bar.
	MU-6006	19	40	
	MU-6007	25	40	

	code	thread size [inch]	lug distance [mm]	description
	MU-6103	1/2	40	Coupling with female thread. Material: AISI 316. Seal: Viton. Working press.: 16 bar.
	MU-6105	3/4	40	
	MU-6107	1	40	

	code	thread size [inch]	lug distance [mm]	description
	MU-6203	1/2	40	Coupling with male thread. Material: AISI 316. Seal: Viton. Working press.: 16 bar.
	MU-6204	3/4	40	
	MU-6205	1	40	

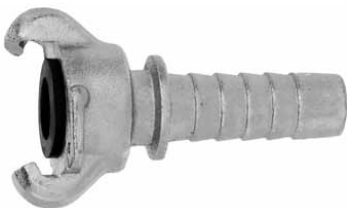
	code	lug distance [mm]	description
	MU-6300	40	Blank cap. Material: AISI 316. Seal: Viton. Working press.: 16 bar.


	code	description
	MU-6399	Viton gasket. Working temp.: from -20°C up to +200°C.





## INDUSTRIAL FITTINGS - couplings

### Claw couplings PN 10 bar, lug distance 41 mm, zinc-plated cast iron (US standard)

	code	hose I.D. [mm]	lug distance [mm]	description
	MU-1700	10	41	Coupling with hose tail, retaining collar and retaining pin holes. Material: zinc-plated cast iron. Seal: oil-resistant rubber. Working press.: 10 bar.
	MU-1701	13	41	
	MU-1702	19	41	
	MU-1703	25	41	


	code	thread size [inch]	lug distance [mm]	description
	MU-1720	3/8 NPT	41	Coupling with female thread and retaining pin holes. Material: zinc-plated cast iron. Seal: oil-resistant rubber. Working press.: 10 bar.
	MU-1721	1/2 NPT	41	
	MU-1722	3/4 NPT	41	
	MU-1723	1 NPT	41	


	code	thread size [inch]	lug distance [mm]	description
	MU-1710	3/8 NPT	41	Coupling with male thread and retaining pin holes Material: zinc-plated cast iron. Seal: oil-resistant rubber. Working press.: 10 bar.
	MU-1711	1/2 NPT	41	
	MU-1712	3/4 NPT	41	
	MU-1713	1 NPT	41	


	code	name	description
	MU-1601	Oil-resistant rubber seal (NBR), temp. from -20°C up to +100°C.	Spare parts for couplings.
	MU-1607	Steam rubber seal (silicone), temp. from -50°C up to +140°C.	
	MU-1609	Retaining pin.	


## INDUSTRIAL FITTINGS - couplings


### Sandblast couplings

	code	hose I.D. [mm]	hose wall thickness [mm]	description
	MU-3101	25	7	Sandblast coupling with hose tail. Material: zinc-plated cast iron. Seal: NBR.
	MU-3102	32	8	
	MU-3103	38	9	
	MU-3104	40	10	
		42	9	

	code	thread size [inch]	description
	MU-3111	1.1/4	Sandblast coupling with female thread. Material: zinc-plated cast iron. Seal: NBR.
	MU-3112	coarse thread	
	MU-3114	2	


	code	coarse thread size	hose I.D. [mm]	hose wall thickness [mm]	description
	MU-3121	1.1/4	25	7	Nozzle holder with female thread and hose tail. Material: aluminium.
	MU-3122	1.1/4	32	8	


	code	coarse thread size	hose I.D. [mm]	hose wall thickness [mm]	description
	MU-3131	50 mm	25	7	Nozzle holder with female thread and hose tail. Material: aluminium.
	MU-3132	50 mm	32	8	

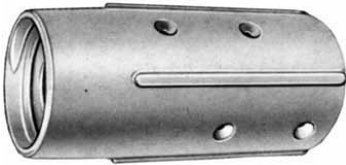
	code	description
	MU-3161	NBR seal.
	MU-3163	Holding screw DIN 7972 4.8x16 mm.
	MU-1609	Retaining pin DIN 11024.

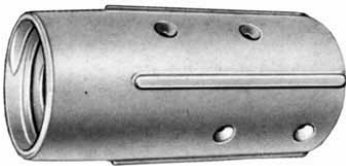
# INDUSTRIAL FITTINGS - couplings


## Sandblast couplings

	code	hose I.D. [mm]	hose wall thickness [mm]	description
	MU-3180	19	7	Sandblast coupling with hose tail. Material: nylon. Seal: NBR.
	MU-3181	25	7	
	MU-3182	32	8	
	MU-3183	38	9	
	MU-3184	40	10	
		42	9	

	code	thread size	description
	MU-3113	1.1/4"	Sandblast coupling with female thread. Material: nylon. Seal: NBR.
	MU-3138	coarse thread 50 mm	

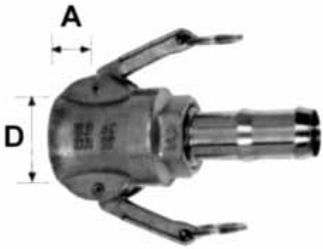
	code	thread size [inch]	hose I.D. [mm]	hose wall thickness [mm]	description
	MU-3123	3/4	13	7.5	Nozzle holder with female thread and hose tail. Material: nylon.
	MU-3124	1.1/4	19	7	
	MU-3125	1.1/4	25	7	
	MU-3126	1.1/4	32	8	
	MU-3127	1.1/4	38	9	

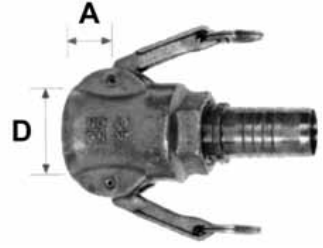
	code	coarse thread size	hose I.D. [mm]	hose wall thickness [mm]	description
	MU-3133	50 mm	13	7.5	Nozzle holder with female thread and hose tail. Material: nylon.
	MU-3134	50 mm	19	7	
	MU-3135	50 mm	25	7	
	MU-3136	50 mm	32	8	
	MU-3137	50 mm	38	9	

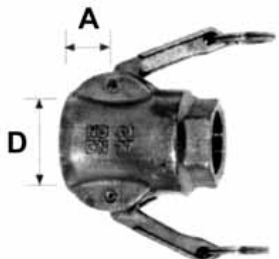
 <p>3166</p> <p>3163</p> <p>3164 / 3165</p>	code	description
	MU-3166	NBR seal for MU-3180 coupling.
	MU-3164	NBR seal for MU-3181 coupling.
	MU-3165	NBR seal for MU-3182 to 3184, 3113, 3138 couplings.
	MU-3163	Holding screw DIN 7972 4.8x16 mm.

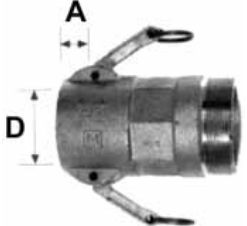
# INDUSTRIAL FITTINGS - couplings

## Mortar couplings

	code	hose I.D. [mm]	A [mm]	D [mm]	description
	MU-2921-2*	25	22	35.5	Mortar coupling with hose tail (for clamp assembly). Material: zinc-plated cast iron (steel). Working press.: 50 bar.  * - with one handle
	MU-2951-2*	25	22	42	
	MU-2961-2	25	22	42	
	MU-2901-1	35	23.5	51	
	MU-2947-1	42	23.5	51	
	MU-2901-2	35	22	51	
	MU-2947-2	42	22	51	
	MU-2945-1	42	23.5	64	
	MU-2911-1	50	23.5	64	
	MU-2945-2	42	22	64	
	MU-2911-2	50	22	64	


	code	hose I.D. [mm]	A [mm]	D [mm]	description
	MU-2951-4*	25	22	42	Mortar coupling with hose tail (for crimping). Material: zinc-plated cast iron (steel). Working press.: 50 bar.  * - with one handle
	MU-2961-4	25	22	42	
	MU-2901-3	35	23.5	51	
	MU-2901-4	35	22	51	
	MU-2911-3	50	23.5	64	
	MU-2911-4	50	22	64	

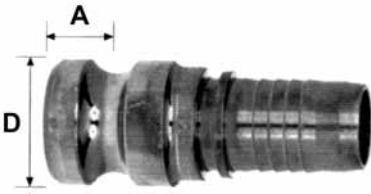
	code	thread size [inch]	A [mm]	D [mm]	description
	MU-2923-2*	1	22	35.5	Mortar coupling with female thread. Material: zinc-plated cast iron (steel). Working press.: 50 bar.  * - with one handle
	MU-2953-2*	1	22	42	
	MU-2963-2	1	22	42	
	MU-2903-1	1	23.5	51	
	MU-2906-1	1.1/4	23.5	51	
	MU-2927-1	1.1/2	23.5	51	
	MU-2903-2	1	22	51	
	MU-2906-2	1.1/4	22	51	
	MU-2927-2	1.1/2	22	51	
	MU-2913-1	2	23.5	64	
	MU-2913-2	2	22	64	

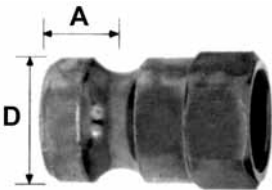
	code	thread size [inch]	A [mm]	D [mm]	description
	MU-2916-1	2.1/2	23.5	64	Mortar coupling with male thread. Material: zinc-plated cast iron (steel). Working press.: 50 bar.
	MU-2916-2	2.1/2	22	64	


# INDUSTRIAL FITTINGS - couplings

## Mortar couplings

	code	hose I.D. [mm]	A [mm]	D [mm]	description  Mortar adapter with hose tail (for clamp assembly). Material: zinc-plated cast iron (steel). Working press.: 50 bar.  * - swivelling plug
	MU-2922-2	25	22	35	
	MU-2952-2	25	22	41	
	MU-2964-2*	25	22	41	
	MU-2908-1	25	23.5	49.5	
	MU-2902-1	35	23.5	49.5	
	MU-2948-1	42	23.5	49.5	
	MU-2908-2	25	22	49.5	
	MU-2902-2	35	22	49.5	
	MU-2948-2	42	22	49.5	
	MU-2905-1	35	23.5	63	
	MU-2946-1	42	23.5	63	
	MU-2912-1	50	23.5	63	
	MU-2905-2	35	22	63	
	MU-2946-2	42	22	63	
	MU-2912-2	50	22	63	


	code	hose I.D. [mm]	A [mm]	D [mm]	description  Mortar adapter with hose tail (for crimping). Material: zinc-plated cast iron (steel). Working press.: 50 bar.  * - swivelling plug
	MU-2952-4	25	22	41	
	MU-2962-4*	25	22	41	
	MU-2908-3	25	23.5	49.5	
	MU-2902-3	35	23.5	49.5	
	MU-2908-4	25	22	49.5	
	MU-2902-4	35	22	49.5	
	MU-2905-3	35	23.5	63	
	MU-2912-3	50	23.5	63	
	MU-2905-4	35	22	63	
	MU-2912-4	50	22	63	


	code	thread size [inch]	A [mm]	D [mm]	description  Mortar adapter with female thread. Material: zinc-plated cast iron (steel). Working press.: 50 bar.
	MU-2924-2	1	22	35	
	MU-2954-2	1	22	41	
	MU-2955-2	1.1/4	22	41	
	MU-2904-1	1	23.5	49.5	
	MU-2925-1	1.1/4	23.5	49.5	
	MU-2928-1	1.1/2	23.5	49.5	
	MU-2904-2	1	22	49.5	
	MU-2925-2	1.1/4	22	49.5	
	MU-2928-2	1.1/2	22	49.5	
	MU-2914-1	2	23.5	63	
	MU-2917-1	2.1/2	23.5	63	
	MU-2914-2	2	22	63	
	MU-2917-2	2.1/2	22	63	


	code	A1 [mm]	D1 [mm]	A2 [mm]	D2 [mm]	description  Male adapter on both ends. Material: zinc-plated cast iron (steel). Working press.: 50 bar.
	MU-2990-2	22	41	22	35	
	MU-2991-2	22	49.5	22	35	
	MU-2991-1	23.5	49.5	22	35	
	MU-2992-2	22	49.5	22	41	
	MU-2992-1	23.5	49.5	22	41	
	MU-2993-2	22	63	22	41	
	MU-2993-1	23.5	63	22	41	
	MU-2994-2	22	63	22	49.5	
	MU-2994-1	23.5	63	23.5	49.5	


# INDUSTRIAL FITTINGS - couplings

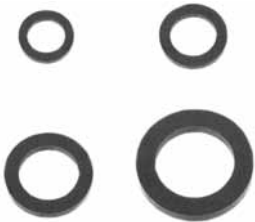
## Mortar couplings

	code	thread size [inch]	A [mm]	D [mm]	description
	MU-2965-2	1	42	22	Mortar coupling with female thread. Material: Nylon (PA6). Working press.: 25 bar.

	code	thread size [inch]	hose I.D. [mm]	description	
	MU-2970-2	1	25	Hose tail with male thread. Material: zinc-plated steel. Working press.: 50 bar.  * - for crimping	
	MU-2970-4*	1	25		
	MU-2971-1	1.1/2	35		
	MU-2973-1	1.1/2	42		
	MU-2972-1	2	50		
	MU-2974-1	2	42		

	code	hose size [mm]	sleeve I.D. [mm]	sleeve O.D. [mm]	description
	MU-2980-3	25x7	41	50	Ferrule for crimping. Material: zinc-plated steel.
	MU-2981-3	35x7	49	58	
	MU-2982-3	50x9	68.5	75	

	code	size [mm]	name	description
	MU-2931	-	Mullenbach handle	Spare parts.
	MU-2937	-	neutral handle	
	MU-2932	6x30	pin	
	MU-2933	6x40	pin	

	code	description
	MU-2930	36x24.5x6 seal
	MU-2936	42x28x6 seal
	MU-2934	53x38x6 seal
	MU-2935	60x50x6 seal

# INDUSTRIAL FITTINGS - fittings, connectors

## Cast iron connectors - EE type

**Material:** Malleable iron - W 40-05 according to PN-EN 1562 and 2000

**Working temp.:** Up to +300°C

**Working press.:** 25 bar (up to +120°C), 20 bar (up to +300°C)

90° long elbow BSP female / BSPT male



**1/13**

code	DN	thread size [inch]
EE-113-04	8	1/4
EE-113-06	10	3/8
EE-113-08	15	1/2
EE-113-12	20	3/4
EE-113-16	25	1
EE-113-20	32	1.1/4
EE-113-24	40	1.1/2
EE-113-32	50	2
EE-113-40	65	2.1/2
EE-113-48	80	3
EE-113-64	100	4

90° long elbow 2 x BSP female



**2/15**

code	DN	thread size [inch]
EE-215-04	8	1/4
EE-215-06	10	3/8
EE-215-08	15	1/2
EE-215-12	20	3/4
EE-215-16	25	1
EE-215-20	32	1.1/4
EE-215-24	40	1.1/2
EE-215-32	50	2
EE-215-40	65	2.1/2
EE-215-48	80	3
EE-215-64	100	4

45° long elbow BSP female / BSPT male



**40/22**

code	DN	thread size [inch]
EE-4022-04	8	1/4
EE-4022-06	10	3/8
EE-4022-08	15	1/2
EE-4022-12	20	3/4
EE-4022-16	25	1
EE-4022-20	32	1.1/4
EE-4022-24	40	1.1/2
EE-4022-32	50	2
EE-4022-40	65	2.1/2
EE-4022-48	80	3
EE-4022-64	100	4

45° long elbow 2 x BSP female



**41/20**

code	DN	thread size [inch]
EE-4120-06	10	3/8
EE-4120-08	15	1/2
EE-4120-12	20	3/4
EE-4120-16	25	1
EE-4120-20	32	1.1/4
EE-4120-24	40	1.1/2
EE-4120-32	50	2
EE-4120-40	65	2.1/2
EE-4120-48	80	3

# INDUSTRIAL FITTINGS - fittings, connectors

## Cast iron connectors - EE type

90° elbow 2 x BSP female



**90/6**

code	DN	thread size [inch]
EE-906-04	8	1/4
EE-906-06	10	3/8
EE-906-08	15	1/2
EE-906-12	20	3/4
EE-906-16	25	1
EE-906-20	32	1.1/4
EE-906-24	40	1.1/2
EE-906-32	50	2
EE-906-40	65	2.1/2
EE-906-48	80	3
EE-906-64	100	4

90° reduction elbow 2 x BSP female



**90/6**

code	thread size [inch]	thread size [inch]
EE-906-06-04	3/8	1/4
EE-906-08-04	1/2	1/4
EE-906-08-06	1/2	3/8
EE-906-12-06	3/4	3/8
EE-906-12-08	3/4	1/2
EE-906-16-06	1	3/8
EE-906-16-08	1	1/2
EE-906-16-12	1	3/4
EE-906-20-08	1.1/4	1/2
EE-906-20-12	1.1/4	3/4
EE-906-20-16	1.1/4	1
EE-906-24-08	1.1/2	1/2
EE-906-24-12	1.1/2	3/4
EE-906-24-16	1.1/2	1
EE-906-24-20	1.1/2	1.1/4
EE-906-32-12	2	3/4
EE-906-32-16	2	1
EE-906-32-20	2	1.1/4
EE-906-32-24	2	1.1/2
EE-906-40-32	2.1/2	2

45° elbow 2 x BSP female



**120/5**

code	DN	thread size [inch]
EE-1205-08	15	1/2
EE-1205-12	20	3/4
EE-1205-16	25	1

90° elbow BSP female / BSPT male



**92/7**

code	DN	thread size [inch]
EE-927-04	8	1/4
EE-927-06	10	3/8
EE-927-08	15	1/2
EE-927-12	20	3/4
EE-927-16	25	1
EE-927-20	32	1.1/4
EE-927-24	40	1.1/2
EE-927-32	50	2
EE-927-40	65	2.1/2
EE-927-48	80	3
EE-927-64	100	4

90° reduction elbow BSP female / BSPT male



**92/7**


code	thread size 1 [inch]	thread size 2 [inch]
EE-927-08-06	1/2	3/8
EE-927-12-08	3/4	1/2
EE-927-16-12	1	3/4




# INDUSTRIAL FITTINGS - fittings, connectors

## Cast iron connectors - EE type

90° elbow 2 x BSPT male		
		
<b>94/94</b>		
code	DN	thread size [inch]
EE-9494-08	15	1/2
EE-9494-12	20	3/4
EE-9494-16	25	1

Tee connection 3 x BSPT male		
		
<b>135/135</b>		
code	DN	thread size [inch]
EE-135135-16	25	1

Tee connection 3 x BSP female		
		
<b>130/25</b>		
code	DN	thread size [inch]
EE-13025-04	8	1/4
EE-13025-06	10	3/8
EE-13025-08	15	1/2
EE-13025-12	20	3/4
EE-13025-16	25	1
EE-13025-20	32	1.1/4
EE-13025-24	40	1.1/2
EE-13025-32	50	2
EE-13025-40	65	2.1/2
EE-13025-48	80	3
EE-13025-64	100	4

Reduction tee connection 3 x BSP female			
			
<b>130/25</b>			
code	thread size 1 [inch]	thread size 2 [inch]	thread size 3 [inch]
EE-13025-06-04-06	3/8	1/4	3/8
EE-13025-08-04-08	1/2	1/4	1/2
EE-13025-08-06-08	1/2	3/8	1/2
EE-13025-12-04-12	3/4	1/4	3/4
EE-13025-12-06-12	3/4	3/8	3/4
EE-13025-12-08-12	3/4	1/2	3/4
EE-13025-16-06-16	1	3/8	1
EE-13025-16-08-16	1	1/2	1
EE-13025-16-12-16	1	3/4	1
EE-13025-20-06-20	1.1/4	3/8	1.1/4
EE-13025-20-08-20	1.1/4	1/2	1.1/4
EE-13025-20-12-20	1.1/4	3/4	1.1/4
EE-13025-20-16-20	1.1/4	1	1.1/4
EE-13025-24-08-24	1.1/2	1/2	1.1/2
EE-13025-24-12-24	1.1/2	3/4	1.1/2
EE-13025-24-16-24	1.1/2	1	1.1/2
EE-13025-24-20-24	1.1/2	1.1/4	1.1/2
EE-13025-32-08-32	2	1/2	2
EE-13025-32-12-32	2	3/4	2
EE-13025-32-16-32	2	1	2
EE-13025-32-20-32	2	1.1/4	2
EE-13025-32-24-32	2	1.1/2	2
EE-13025-40-12-40	2.1/2	3/4	2.1/2
EE-13025-40-16-40	2.1/2	1	2.1/2
EE-13025-40-20-40	2.1/2	1.1/4	2.1/2
EE-13025-40-24-40	2.1/2	1.1/2	2.1/2
EE-13025-40-32-40	2.1/2	2	2.1/2
EE-13025-48-16-48	3	1	3
EE-13025-48-20-48	3	1.1/4	3
EE-13025-48-24-48	3	1.1/2	3
EE-13025-48-32-48	3	2	3
EE-13025-48-40-48	3	2.1/2	3
EE-13025-64-24-64	4	1.1/2	4
EE-13025-64-32-64	4	2	4
EE-13025-64-40-64	4	2.1/2	4
EE-13025-64-48-64	4	3	4

# INDUSTRIAL FITTINGS - fittings, connectors

## Cast iron connectors - EE type

Reduction tee connection 3 x BSP female



code	thread size 1 [inch]	thread size 2 [inch]	thread size 3 [inch]
EE-13025-06-08-06	3/8	1/2	3/8
EE-13025-08-12-08	1/2	3/4	1/2
EE-13025-08-16-08	1/2	1	1/2
EE-13025-12-16-12	3/4	1	3/4
EE-13025-16-20-16	1	1.1/4	1
EE-13025-16-24-16	1	1.1/2	1
EE-13025-20-24-20	1.1/4	1.1/2	1.1/4
EE-13025-20-32-20	1.1/4	2	1.1/4
EE-13025-24-32-24	1.1/2	2	1.1/2
EE-13025-32-24-32	2	2.1/2	2
EE-13025-32-40-32	2	3	2
EE-13025-08-06-06	1/2	3/8	3/8
EE-13025-12-06-08	3/4	3/8	1/2
EE-13025-12-08-08	3/4	1/2	1/2
EE-13025-16-08-08	1	1/2	1/2
EE-13025-16-08-12	1	1/2	3/4
EE-13025-16-12-08	1	3/4	1/2
EE-13025-16-12-12	1	3/4	3/4
EE-13025-20-08-16	1.1/4	1/2	1
EE-13025-20-12-12	1.1/4	3/4	3/4
EE-13025-20-12-16	1.1/4	3/4	1
EE-13025-20-16-16	1.1/4	1	1
EE-13025-24-08-12	1.1/2	1/2	3/4
EE-13025-24-16-12	1.1/2	1	3/4
EE-13025-24-16-16	1.1/2	1	1
EE-13025-24-16-20	1.1/2	1	1.1/4
EE-13025-24-20-20	1.1/2	1.1/4	1.1/4
EE-13025-32-24-24	2	1.1/2	1.1/2
EE-13025-08-08-06	1/2	1/2	3/8
EE-13025-12-12-08	3/4	3/4	1/2
EE-13025-16-16-08	1	1	1/2
EE-13025-16-16-12	1	1	3/4
EE-13025-20-20-12	1.1/4	1.1/4	3/4
EE-13025-20-20-16	1.1/4	1.1/4	1
EE-13025-24-24-20	1.1/2	1.1/2	1.1/4

45° "Y" pipe 3 x BSP female



code	DN	thread size [inch]
EE-16530-08	15	1/2
EE-16530-12	20	3/4
EE-16530-16	25	1
EE-16530-20	32	1.1/4
EE-16530-24	40	1.1/2
EE-16530-32	50	2

Pipe cross 4 x BSP female



code	DN	thread size [inch]
EE-18034-06	10	3/8
EE-18034-08	15	1/2
EE-18034-12	20	3/4
EE-18034-16	25	1
EE-18034-20	32	1.1/4
EE-18034-24	40	1.1/2
EE-18034-32	50	2
EE-18034-40	65	2.1/2
EE-18034-48	80	3
EE-18034-64	100	4

Reduction pipe cross 4 x BSP female



code	thread size 1 [inch]	thread size 2 [inch]	thread size 3 [inch]	thread size 4 [inch]
EE-18034-12-08-12-08	3/4	1/2	3/4	1/2
EE-18034-16-08-16-08	1	1/2	1	1/2
EE-18034-16-12-16-12	1	3/4	1	3/4

# INDUSTRIAL FITTINGS - fittings, connectors

## Cast iron connectors - EE type

"Y" pipe 3 x BSP female



**220/220**

code	DN	thread size [inch]
EE-220220-08	15	1/2
EE-220220-12	20	3/4
EE-220220-16	25	1

Side outlet 3 x BSP female



**221/33**

code	DN	thread size [inch]
EE-22133-06	10	3/8
EE-22133-08	15	1/2
EE-22133-12	20	3/4
EE-22133-16	25	1
EE-22133-20	32	1.1/4
EE-22133-24	40	1.1/2
EE-22133-32	50	2

Reduction adapter BSP female



**240/3**

code	thread size [inch]	thread size [inch]
EE-2403-06-04	3/8	1/4
EE-2403-08-04	1/2	1/4
EE-2403-08-06	1/2	3/8
EE-2403-12-06	3/4	3/8
EE-2403-12-08	3/4	1/2
EE-2403-16-06	1	3/8
EE-2403-16-08	1	1/2
EE-2403-16-12	1	3/4
EE-2403-20-06	1.1/4	3/8
EE-2403-20-08	1.1/4	1/2
EE-2403-20-12	1.1/4	3/4
EE-2403-20-16	1.1/4	1
EE-2403-24-08	1.1/2	1/2
EE-2403-24-12	1.1/2	3/4
EE-2403-24-16	1.1/2	1
EE-2403-24-20	1.1/2	1.1/4
EE-2403-32-08	2	1/2
EE-2403-32-12	2	3/4
EE-2403-32-16	2	1
EE-2403-32-20	2	1.1/4
EE-2403-32-24	2	1.1/2
EE-2403-40-16	2.1/2	1
EE-2403-40-20	2.1/2	1.1/4
EE-2403-40-24	2.1/2	1.1/2
EE-2403-40-32	2.1/2	2
EE-2403-48-20	3	1.1/4
EE-2403-48-24	3	1.1/2
EE-2403-48-32	3	2
EE-2403-48-40	3	2.1/2
EE-2403-64-32	4	2
EE-2403-64-40	4	2.1/2
EE-2403-64-48	4	3

Adapter BSP female



**270/2**

code	DN	thread size [inch]
EE-2702-04	8	1/4
EE-2702-06	10	3/8
EE-2702-08	15	1/2
EE-2702-12	20	3/4
EE-2702-16	25	1
EE-2702-20	32	1.1/4
EE-2702-24	40	1.1/2
EE-2702-32	50	2
EE-2702-40	65	2.1/2
EE-2702-48	80	3
EE-2702-64	100	4

# INDUSTRIAL FITTINGS - fittings, connectors

## Cast iron connectors - EE type

Reduction adapter BSPT male / BSP female



**241/45**

code	male thread size [inch]	female thread size [inch]
EE-24145-06-04	3/8	1/4
EE-24145-08-04	1/2	1/4
EE-24145-08-06	1/2	3/8
EE-24145-12-04	3/4	1/4
EE-24145-12-06	3/4	3/8
EE-24145-12-08	3/4	1/2
EE-24145-16-06	1	3/8
EE-24145-16-08	1	1/2
EE-24145-16-12	1	3/4
EE-24145-20-06	1.1/4	3/8
EE-24145-20-08	1.1/4	1/2
EE-24145-20-12	1.1/4	3/4
EE-24145-20-16	1.1/4	1
EE-24145-24-08	1.1/2	1/2
EE-24145-24-12	1.1/2	3/4
EE-24145-24-16	1.1/2	1
EE-24145-24-20	1.1/2	1.1/4
EE-24145-32-08	2	1/2
EE-24145-32-12	2	3/4
EE-24145-32-16	2	1
EE-24145-32-20	2	1.1/4
EE-24145-32-24	2	1.1/2
EE-24145-40-16	2.1/2	1
EE-24145-40-20	2.1/2	1.1/4
EE-24145-40-24	2.1/2	1.1/2
EE-24145-40-32	2.1/2	2
EE-24145-48-16	3	1
EE-24145-48-20	3	1.1/4
EE-24145-48-24	3	1.1/2
EE-24145-48-32	3	2
EE-24145-48-40	3	2.1/2
EE-24145-64-32	4	2
EE-24145-64-40	4	2.1/2
EE-24145-64-48	4	3

Reduction nipple 2 x BSPT male



**245/40**

code	thread size [inch]	thread size [inch]
EE-24540-06-04	3/8	1/4
EE-24540-08-04	1/2	1/4
EE-24540-08-06	1/2	3/8
EE-24540-12-06	3/4	3/8
EE-24540-12-08	3/4	1/2
EE-24540-16-08	1	1/2
EE-24540-16-12	1	3/4
EE-24540-20-08	1.1/4	1/2
EE-24540-20-12	1.1/4	3/4
EE-24540-20-16	1.1/4	1
EE-24540-24-12	1.1/2	3/4
EE-24540-24-16	1.1/2	1
EE-24540-24-20	1.1/2	1.1/4
EE-24540-32-16	2	1
EE-24540-32-20	2	1.1/4
EE-24540-32-24	2	1.1/2
EE-24540-40-24	2.1/2	1.1/2
EE-24540-40-32	2.1/2	2
EE-24540-48-32	3	2
EE-24540-48-40	3	2.1/2

Nipple 2 x BSPT male



**280/38**

code	DN	thread size [inch]
EE-28038-04	8	1/4
EE-28038-06	10	3/8
EE-28038-08	15	1/2
EE-28038-12	20	3/4
EE-28038-16	25	1
EE-28038-20	32	1.1/4
EE-28038-24	40	1.1/2
EE-28038-32	50	2
EE-28038-40	65	2.1/2
EE-28038-48	80	3
EE-28038-64	100	4

# INDUSTRIAL FITTINGS - fittings, connectors

## Cast iron connectors - EE type

Reduction adapter BSP female / BSPT male



**246/246**

code	female thread size [inch]	male thread size [inch]
EE-246246-06-04	3/8	1/4
EE-246246-08-04	1/2	1/4
EE-246246-08-06	1/2	3/8
EE-246246-12-06	3/4	3/8
EE-246246-12-08	3/4	1/2
EE-246246-16-08	1	1/2
EE-246246-16-12	1	3/4
EE-246246-20-12	1.1/4	3/4
EE-246246-20-16	1.1/4	1
EE-246246-24-16	1.1/2	1
EE-246246-24-20	1.1/2	1.1/4
EE-246246-32-20	2	1.1/4
EE-246246-32-24	2	1.1/2

Blank plug



**290/46**

code	thread size [inch]
EE-29046-04	1/4
EE-29046-06	3/8
EE-29046-08	1/2
EE-29046-12	3/4
EE-29046-16	1
EE-29046-20	1.1/4
EE-29046-24	1.1/2
EE-29046-32	2
EE-29046-40	2.1/2
EE-29046-48	3
EE-29046-64	4

Blank cap



**300/43**

code	thread size [inch]
EE-30043-04	1/4
EE-30043-06	3/8
EE-30043-08	1/2
EE-30043-12	3/4
EE-30043-16	1
EE-30043-20	1.1/4
EE-30043-24	1.1/2
EE-30043-32	2
EE-30043-40	2.1/2
EE-30043-48	3
EE-30043-64	4

Lock nut



**310/44**

code	thread size [inch]
EE-31044-04	1/4
EE-31044-06	3/8
EE-31044-08	1/2
EE-31044-12	3/4
EE-31044-16	1
EE-31044-20	1.1/4
EE-31044-24	1.1/2
EE-31044-32	2
EE-31044-40	2.1/2
EE-31044-48	3

# INDUSTRIAL FITTINGS - fittings, connectors

## Cast iron connectors - EE type

Pipe joint 2 x BSP female



**330/48**

code	DN	thread size [inch]
EE-33048-06	10	3/8
EE-33048-08	15	1/2
EE-33048-12	20	3/4
EE-33048-16	25	1
EE-33048-20	32	1.1/4
EE-33048-24	40	1.1/2
EE-33048-32	50	2
EE-33048-40	65	2.1/2
EE-33048-48	80	3
EE-33048-64	100	4

Pipe joint BSP female / BSPT male



**331/59**

code	DN	thread size [inch]
EE-33159-06	10	3/8
EE-33159-08	15	1/2
EE-33159-12	20	3/4
EE-33159-16	25	1
EE-33159-20	32	1.1/4
EE-33159-24	40	1.1/2
EE-33159-32	50	2
EE-33159-40	65	2.1/2
EE-33159-48	80	3

Pipe joint 2 x BSPT female



**340/54**

code	DN	thread size [inch]
EE-34054-06	10	3/8
EE-34054-08	15	1/2
EE-34054-12	20	3/4
EE-34054-16	25	1
EE-34054-20	32	1.1/4
EE-34054-24	40	1.1/2
EE-34054-32	50	2
EE-34054-40	65	2.1/2
EE-34054-48	80	3
EE-34054-64	100	4

Pipe joint BSPT female / BSPT male



**341/60**

code	DN	thread size [inch]
EE-34160-06	10	3/8
EE-34160-08	15	1/2
EE-34160-12	20	3/4
EE-34160-16	25	1
EE-34160-20	32	1.1/4
EE-34160-24	40	1.1/2
EE-34160-32	50	2
EE-34160-40	65	2.1/2
EE-34160-48	80	3
EE-34160-64	100	4

# INDUSTRIAL FITTINGS - fittings, connectors

## Brass connectors - RV type

**Material:** Brass

**Working temp.:** From -10°C up to +100°C

90° elbow BSP female



**3400**

code	size	thread size [inch]
RV-3400-04	8	1/4
RV-3400-06	10	3/8
RV-3400-08	15	1/2
RV-3400-12	20	3/4
RV-3400-16	25	1
RV-3400-20	32	1.1/4
RV-3400-24	40	1.1/2
RV-3400-32	50	2

90° elbow BSP female / male



**3401**

code	size	thread size [inch]
RV-3401-04	8	1/4
RV-3401-06	10	3/8
RV-3401-08	15	1/2
RV-3401-12	20	3/4
RV-3401-16	25	1
RV-3401-20	32	1.1/4
RV-3401-24	40	1.1/2
RV-3401-32	50	2

Adapter BSP female



**3410**

code	size	thread size [inch]
RV-3410-04	8	1/4
RV-3410-06	10	3/8
RV-3410-08	15	1/2
RV-3410-12	20	3/4
RV-3410-16	25	1
RV-3410-20	32	1.1/4
RV-3410-24	40	1.1/2
RV-3410-32	50	2

Tee connection BSP female



**3420**

code	size	thread size [inch]
RV-3420-04	8	1/4
RV-3420-06	10	3/8
RV-3420-08	15	1/2
RV-3420-12	20	3/4
RV-3420-16	25	1
RV-3420-20	32	1.1/4
RV-3420-24	40	1.1/2
RV-3420-32	50	2

Nipple BSP male



**3430**

code	size	thread size [inch]
RV-3430-04	8	1/4
RV-3430-06	10	3/8
RV-3430-08	15	1/2
RV-3430-12	20	3/4
RV-3430-16	25	1
RV-3430-20	32	1.1/4
RV-3430-24	40	1.1/2
RV-3430-32	50	2

Reduction nipple BSP male



**3430**

code	size	thread size [inch]	thread size [inch]
RV-3430-04-06	8	1/4	3/8
RV-3430-06-08	10	3/8	1/2
RV-3430-08-12	15	1/2	3/4
RV-3430-12-16	20	3/4	1
RV-3430-16-20	25	1	1.1/4
RV-3430-20-24	32	1.1/4	1.1/2
RV-3430-24-32	40	1.1/2	2
RV-3430-32-40	50	2	2.1/2

# INDUSTRIAL FITTINGS - fittings, connectors

## Brass connectors - RV type

Blank plug BSP male



**3480**

code	size	thread size [inch]
RV-3480-04	8	1/4
RV-3480-06	10	3/8
RV-3480-08	15	1/2
RV-3480-12	20	3/4
RV-3480-16	25	1
RV-3480-20	32	1.1/4
RV-3480-24	40	1.1/2
RV-3480-32	50	2

Blank cap BSP female



**3490**

code	size	thread size [inch]
RV-3490-04	8	1/4
RV-3490-06	10	3/8
RV-3490-08	15	1/2
RV-3490-12	20	3/4
RV-3490-16	25	1
RV-3490-20	32	1.1/4
RV-3490-24	40	1.1/2
RV-3490-32	50	2

Reduction adapter BSP male / female



**3450**

code	size	male thread size [inch]	female thread size [inch]
RV-3450-04-02	6	1/4	1/8
RV-3450-06-02	6	3/8	1/8
RV-3450-06-04	8	3/8	1/4
RV-3450-08-04	8	1/2	1/4
RV-3450-08-06	10	1/2	3/8
RV-3450-12-04	8	3/4	1/4
RV-3450-12-06	10	3/4	3/8
RV-3450-12-08	15	3/4	1/2
RV-3450-16-06	10	1	3/8
RV-3450-16-08	15	1	1/2
RV-3450-16-12	20	1	3/4
RV-3450-20-12	20	1.1/4	3/4
RV-3450-20-16	25	1.1/4	1
RV-3450-24-12	20	1.1/2	3/4
RV-3450-24-16	25	1.1/2	1
RV-3450-24-20	32	1.1/2	1.1/4
RV-3450-32-20	32	2	1.1/4
RV-3450-32-24	40	2	1.1/2
RV-3450-40-32	50	2.1/2	2

Pipe joint BSP female



**3460**

code	size	thread size [inch]
RV-3460-08	15	1/2
RV-3460-12	20	3/4
RV-3460-16	25	1





# INDUSTRIAL FITTINGS - fittings, connectors


## Brass connectors - MU type


**Working press:** Up to 12 bar


**Working temp.:** From -20°C up to +100°C


Nipple BSP male (internal cone)			
			
code	thread size [inch]	thread size [inch]	spanner size [mm]
MU-4201	1/8	1/8	14
MU-4202	1/8	1/4	17
MU-4203	1/4	1/4	17
MU-4204	1/4	3/8	19
MU-4208	1/4	1/2	24
MU-4205	3/8	3/8	19
MU-4206	3/8	1/2	24
MU-4213	3/8	3/4	32
MU-4207	1/2	1/2	24
MU-4209	1/2	3/4	32
MU-4215	1/2	1	36
MU-4211	3/4	3/4	32
MU-4210	3/4	1	36
MU-4216	1	1	36

Reduction adapter BSP female / male			
			
code	thread size [inch]	thread size [inch]	spanner size [mm]
MU-4251	1/4	1/8	17
MU-4256	3/8	1/8	19
MU-4252	3/8	1/4	19
MU-4257	1/2	1/8	24
MU-4254	1/2	1/4	24
MU-4253	1/2	3/8	21
MU-4258	3/4	3/8	32
MU-4255	3/4	1/2	32
MU-4259	1	1/2	36
MU-4260	1	3/4	36

90° elbow BSP female	
	
code	thread size [inch]
MU-1142	1/8
MU-1143	1/4
MU-1144	3/8
MU-1145	1/2
MU-1146	3/4
MU-1147	1

"T" Tee connection BSP female	
	
code	thread size [inch]
MU-1172	1/8
MU-1173	1/4
MU-1174	3/8
MU-1175	1/2
MU-1176	3/4
MU-1177	1

"Y" Tee connection BSP female	
	
code	thread size [inch]
MU-1190	3/8
MU-1191	1/2

Cross BSP female	
	
code	thread size [inch]
MU-1195	3/8
MU-1198	1/2

\* - versions with EUROSTANDARD DN5, DN7.2 couplers available as well

# INDUSTRIAL FITTINGS - fittings, connectors

## Brass connectors - MU type

Hose fitting, BSP male, 37° internal cone



code	thread size [inch]	hose I.D. [mm]	spanner size [mm]
MU-2850	1/8	6	14
MU-2866	1/8	8	14
MU-2851	1/8	9	14
MU-2867	1/4	4	17
MU-2852	1/4	6	17
MU-2861	1/4	8	17
MU-2853	1/4	9	17
MU-2854	1/4	13	17
MU-2855	3/8	6	19
MU-2868	3/8	8	19
MU-2856	3/8	9	19
MU-2857	3/8	13	19
MU-2858	1/2	6	24
MU-2859	1/2	9	24
MU-2860	1/2	13	24
MU-2869	3/4	13	32
MU-2863	3/4	19	32
MU-2864	1	25	36

Hose fitting, ball end (insert)



code	nut size [inch]	hose I.D. [mm]
MU-2891	1/4 (MU-2881)	6
MU-2893	1/4 (MU-2287)	9
MU-2895	3/8 (MU-2883)	6
MU-2896	3/8 (MU-2883)	9
MU-2897	1/2 (MU-2885)	6
MU-2898	1/2 (MU-2885)	9
MU-2899	1/2 (MU-2885)	13

Hexagonal nut



code	thread size [inch]	hole diameter [mm]	spanner size [mm]
MU-2881	1/4	9.6	17
MU-2887	1/4	10.4	17
MU-2883	3/8	12.6	19
MU-2885	1/2	15.2	24

BSP female adaptor



code	thread size [inch]	spanner size [mm]
MU-4221	1/4	17
MU-4222	3/8	22
MU-4223	1/2	27
MU-4224	3/4	32

Hose connector



code	hose I.D. [mm]	length [mm]
MU-1850	4	63
MU-1851	6	72
MU-1852	8	72
MU-1853	9	72
MU-1849	10	47
MU-1854	13	48
MU-1855	15	51
MU-1856	19	55
MU-1857	25	58

# INDUSTRIAL FITTINGS - fittings, connectors

## Brass connectors - EW type

**Working press.:** Up to 40 bar

**Working temp.:** From -10°C up to +90°C

Hose fitting, BSP female, fixed nut



code	thread size [inch]	hose I.D. [mm]	spanner size [mm]
EW-MS-11309	1/8	4	12
EW-MS-11310	1/8	6	12
EW-MS-11311	1/8	9	14
EW-MS-11312	1/4	4	17
EW-MS-11313	1/4	6	17
EW-MS-11314	1/4	9	17
EW-MS-11315	1/4	13	17
EW-MS-11316	3/8	6	19
EW-MS-11317	3/8	9	19
EW-MS-11318	3/8	13	19
EW-MS-11319	1/2	6	24
EW-MS-11320	1/2	9	24
EW-MS-11321	1/2	13	24
EW-MS-11322	3/4	9	32
EW-MS-11323	3/4	13	32
EW-MS-11324	3/4	19	32
EW-MS-11331	1	19	36
EW-MS-11332	1	25	36
EW-MS-11333	1	32	36

Hose fitting, BSP male, 45° internal cone



code	thread size [inch]	hose I.D. [mm]	spanner size [mm]
EW-MS-11341	1/8	4	14
EW-MS-11351	1/8	6	14
EW-MS-11352	1/8	9	14
EW-MS-11368	1/4	4	17
EW-MS-11331A	1/4	6	17
EW-MS-11340A	1/4	9	17
EW-MS-11371	1/4	13	17
EW-MS-11332A	3/8	6	17
EW-MS-11334A	3/8	9	17
EW-MS-11343	3/8	13	19
EW-MS-11367	1/2	6	24
EW-MS-11366	1/2	9	24
EW-MS-11344	1/2	13	24
EW-MS-11325	3/4	9	32
EW-MS-11326	3/4	13	32
EW-MS-11327	3/4	19	32
EW-MS-11328	1	19	36
EW-MS-11329	1	25	36
EW-MS-11330	1	32	36

Hose fitting, BSP female, swivel nut



code	thread size [inch]	hose I.D. [mm]	spanner size [mm]
EW-MS-K-02-04	1/8	4	12
EW-MS-K-02-06	1/8	6	12
EW-MS-K-04-04	1/4	4	17
EW-MS-K-04-06	1/4	6	17
EW-MS-K-04-09	1/4	9	17
EW-MS-K-06-04	3/8	4	19
EW-MS-K-06-06	3/8	6	19
EW-MS-K-06-09	3/8	9	19
EW-MS-K-08-06	1/2	6	24
EW-MS-K-08-09	1/2	9	24
EW-MS-K-08-13	1/2	13	24

Hose fitting with ball end (insert)



code	nut size [inch]	hose I.D. [mm]
EW-MS-W-02-04	1/8	4
EW-MS-W-02-06	1/8	6
EW-MS-W-04-04	1/4	4
EW-MS-W-04-06	1/4	6
EW-MS-W-04-09	1/4	9
EW-MS-W-06-04	3/8	4
EW-MS-W-06-06	3/8	6
EW-MS-W-06-09	3/8	9
EW-MS-W-08-06	1/2	6
EW-MS-W-08-09	1/2	9
EW-MS-W-08-13	1/2	13

Hexagonal nut



code	thread size [inch]	spanner size [mm]
EW-MS-N-02	1/8	12
EW-MS-N-04	1/4	17
EW-MS-N-06	3/8	19
EW-MS-N-06LH	3/8 (left thread)	19
EW-MS-N-08	1/2	24

# INDUSTRIAL FITTINGS - fittings, connectors

## Brass connectors - EW type

**Working press.:** Up to 63 bar

**Working temp.:** From -10°C up to +90°C

90°elbow, BSP male



code	size	thread size [inch]	spanner size [mm]
EW-MS-18582	5	1/8	10
EW-MS-18583	7	1/4	13
EW-MS-18585	8	3/8	17
EW-MS-18587	12	1/2	21
EW-MS-18588*	19	3/4	25
EW-MS-18589*	25	1	30

90°elbow, BSP female / male



code	size	thread size [inch]	spanner size [mm]
EW-MS-18542	6	1/8	10
EW-MS-18543	8	1/4	13
EW-MS-18545	11	3/8	17
EW-MS-18547	15	1/2	21
EW-MS-18548	19	3/4	25
EW-MS-18549	25	1	30

Tee, BSP male



code	size	thread size [inch]	spanner size [mm]
EW-MS-18597	5	1/8	10
EW-MS-18596	8	1/4	13
EW-MS-18595	9	3/8	17
EW-MS-18594	12	1/2	21
EW-MS-18593*	19	3/4	25
EW-MS-18592*	25	1	30

Tee, BSP female / male / female



code	size	thread size [inch]	spanner size [mm]
EW-MS-18562	6	1/8	10
EW-MS-18563	8	1/4	13
EW-MS-18565	11	3/8	17
EW-MS-18567	15	1/2	21
EW-MS-18568	19	3/4	25
EW-MS-18569	25	1	30

Tee, BSP female / female / male



code	size	thread size [inch]	spanner size [mm]
EW-MS-18512	6	1/8	10
EW-MS-18513	8	1/4	13
EW-MS-18515	15	3/8	17
EW-MS-18517	19	1/2	21
EW-MS-18518*	25	3/4	25
EW-MS-18519*	30	1	33

Tee, BSP female



code	size	thread size [inch]
EW-MS-185197	8	1/8
EW-MS-185196	11	1/4
EW-MS-185195	15	3/8
EW-MS-185194	19	1/2
EW-MS-185193	25	3/4
EW-MS-185192	30	1

\* - without internal cone

# INDUSTRIAL FITTINGS - fittings, connectors

## Brass connectors - EW type

Tee, BSP female



code	thread size [inch]
EW-MS-12135	3/8
EW-MS-12150	1/2

Cross, BSP female



code	thread size [inch]
EW-MS-12134	3/8
EW-MS-12154	1/2

90° elbow, BSP female



code	size	thread size [inch]
EW-MS-185182	6	1/8
EW-MS-185183	8	1/4
EW-MS-185185	15	3/8
EW-MS-185187	19	1/2
EW-MS-185188	25	3/4
EW-MS-185189	30	1

90° elbow with mounting ears, BSP female



code	thread size [inch]	mounting (hole DN) [mm]
EW-MS-12155	3/8	4.5
EW-MS-12156	1/2	4.5
EW-MS-12157	3/4	4.5

Angled air diffuser with mounting ears 5 x BSP female



code	thread size [inch]	mounting (hole DN) [mm]
EW-MS-12159	1/2	5.5

Straight air diffuser with mounting ears 5 x BSP female



code	thread size [inch]	mounting (hole DN) [mm]
EW-MS-12158	1/2	5.5

Hose connector, PN 40 bar



code	hose I.D. [mm]	length [mm]
EW-MS-11300	4	64
EW-MS-11301	6	72
EW-MS-11302	6 / 8	72
EW-MS-11303	9	72
EW-MS-11304	13	72

# INDUSTRIAL FITTINGS - fittings, connectors

## Stainless steel connectors - VT type

**Material:** AISI 316

**Working press.:** 10 bar

90° elbow BSP female



**VT 101**

code	size	thread size [inch]
NM-VT101-04	8	1/4
NM-VT101-06	10	3/8
NM-VT101-08	15	1/2
NM-VT101-12	20	3/4
NM-VT101-16	25	1
NM-VT101-20	32	1.1/4
NM-VT101-24	40	1.1/2
NM-VT101-32	50	2
NM-VT101-40	65	2.1/2
NM-VT101-48	80	3
NM-VT101-64	100	4

45° elbow BSP female



**VT 107**

code	size	thread size [inch]
NM-VT107-04	8	1/4
NM-VT107-06	10	3/8
NM-VT107-08	15	1/2
NM-VT107-12	20	3/4
NM-VT107-16	25	1
NM-VT107-20	32	1.1/4
NM-VT107-24	40	1.1/2
NM-VT107-32	50	2

90° elbow BSP female / BSPT male



**VT 153**

code	size	thread size [inch]
NM-VT153-04	8	1/4
NM-VT153-06	10	3/8
NM-VT153-08	15	1/2
NM-VT153-12	20	3/4
NM-VT153-16	25	1
NM-VT153-20	32	1.1/4
NM-VT153-24	40	1.1/2
NM-VT153-32	50	2
NM-VT153-40	65	2.1/2
NM-VT153-48	80	3

Tee connection BSP female



**VT 103**

code	size	thread size [inch]
NM-VT103-04	8	1/4
NM-VT103-06	10	3/8
NM-VT103-08	15	1/2
NM-VT103-12	20	3/4
NM-VT103-16	25	1
NM-VT103-20	32	1.1/4
NM-VT103-24	40	1.1/2
NM-VT103-32	50	2
NM-VT103-40	65	2.1/2
NM-VT103-48	80	3

# INDUSTRIAL FITTINGS - fittings, connectors

## Stainless steel connectors - VT type

Reduction tee BSP female



code	size	thread size 1, 2 [inch]	thread size 3 [inch]
NM-VT104-06-04	10	3/8	1/4
NM-VT104-08-04	15	1/2	1/4
NM-VT104-08-06	15	1/2	3/8
NM-VT104-12-06	20	3/4	3/8
NM-VT104-12-08	20	3/4	1/2
NM-VT104-16-08	25	1	1/2
NM-VT104-16-12	25	1	3/4
NM-VT104-24-12	40	1.1/2	3/4
NM-VT104-32-12	50	2	3/4
NM-VT104-32-16	50	2	1
NM-VT104-32-24	50	2	1.1/2

Cross BSP female



code	size	thread size [inch]
NM-VT105-04	8	1/4
NM-VT105-06	10	3/8
NM-VT105-08	15	1/2
NM-VT105-12	20	3/4
NM-VT105-16	25	1
NM-VT105-20	32	1.1/4
NM-VT105-24	40	1.1/2
NM-VT105-32	50	2
NM-VT105-40	65	2.1/2
NM-VT105-48	80	3
NM-VT105-64	100	4

Nipple BSPT male



code	size	thread size [inch]	spanner size [mm]
NM-VT116-04	8	1/4	14
NM-VT116-06	10	3/8	19
NM-VT116-08	15	1/2	22
NM-VT116-12	20	3/4	30
NM-VT116-16	25	1	36
NM-VT116-20	32	1.1/4	46
NM-VT116-24	40	1.1/2	50
NM-VT116-32	50	2	65
NM-VT116-40	65	2.1/2	81
NM-VT116-48	80	3	92
NM-VT116-64	100	4	120

Reduction nipple BSPT male



code	size	thread size 1 [inch]	thread size 2 [inch]	spanner size [mm]
NM-VT117-04-02	8	1/4	1/8	14
NM-VT117-06-04	10	3/8	1/4	19
NM-VT117-08-06	15	1/2	3/8	22
NM-VT117-12-08	20	3/4	1/2	30
NM-VT117-16-12	25	1	3/4	36
NM-VT117-20-16	32	1.1/4	1	46
NM-VT117-24-20	40	1.1/2	1.1/4	50
NM-VT117-32-24	50	2	1.1/2	65

# INDUSTRIAL FITTINGS - fittings, connectors

## Stainless steel connectors - VT type

Nipple (butt weld) BSPT male



**VT 126**

code	size	thread size [inch]	diameter [mm]	wall thickness [mm]
NM-VT126-04	8	1/4	13.5	2.3
NM-VT126-06	10	3/8	17.2	2.3
NM-VT126-08	15	1/2	21.3	2.6
NM-VT126-12	20	3/4	26.9	2.6
NM-VT126-16	25	1	33.7	3.2
NM-VT126-20	32	1.1/4	42.4	3.2
NM-VT126-24	40	1.1/2	48.3	3.2
NM-VT126-32	50	2	60.3	3.6
NM-VT126-40	65	2.1/2	76.1	3.6
NM-VT126-48	80	3	88.9	4
NM-VT126-64	100	4	114.3	4.5

Double nipple BSPT male



**VT 127**

code	size	thread size [inch]	diameter [mm]	wall thickness [mm]
NM-VT127-04	8	1/4	13.5	2.3
NM-VT127-06	10	3/8	17.2	2.3
NM-VT127-08	15	1/2	21.3	2.6
NM-VT127-12	20	3/4	26.9	2.6
NM-VT127-16	25	1	33.7	3.2
NM-VT127-20	32	1.1/4	42.4	3.2
NM-VT127-24	40	1.1/2	48.3	3.2
NM-VT127-32	50	2	60.3	3.6
NM-VT127-40	65	2.1/2	76.1	3.6
NM-VT127-48	80	3	88.9	4
NM-VT127-64	100	4	114.3	4.5

Fitting with hose tail and BSPT male



**VT 123**

code	size	thread size [inch]	fitting diameter [mm]	hose size [inch]
NM-VT123-02	6	1/8	6.7	1/4
NM-VT123-04	8	1/4	9	5/16
NM-VT123-06	10	3/8	10.5	3/8
NM-VT123-08	15	1/2	14	1/2
NM-VT123-12	20	3/4	20.5	3/4
NM-VT123-16	25	1	27.5	1
NM-VT123-20	32	1.1/4	34	1.1/4
NM-VT123-24	40	1.1/2	40.3	1.1/2
NM-VT123-32	50	2	52	2
NM-VT123-40	65	2.1/2	65	2.1/2
NM-VT123-48	80	3	77	3

Adapter BSP female



**VT 1221**

code	size	thread size [inch]	diameter [mm]	length [mm]
NM-VT1221-04	8	1/4	18	26.5
NM-VT1221-06	10	3/8	21	29
NM-VT1221-08	15	1/2	25	33
NM-VT1221-12	20	3/4	31	34.5
NM-VT1221-16	25	1	38	41.5
NM-VT1221-20	32	1.1/4	47	47.5
NM-VT1221-24	40	1.1/2	52	47.5
NM-VT1221-32	50	2	68	62
NM-VT1221-40	65	2.1/2	84.5	70
NM-VT1221-48	80	3	97	76
NM-VT1221-64	100	4	125	86



# INDUSTRIAL FITTINGS - fittings, connectors

## Stainless steel connectors - VT type

Short adapter BSP female



**VT 102**

code	size	thread size [inch]	diameter [mm]	length [mm]
NM-VT102-04	8	1/4	18.5	11
NM-VT102-06	10	3/8	21.3	12
NM-VT102-08	15	1/2	26.4	15
NM-VT102-12	20	3/4	31.8	15
NM-VT102-16	25	1	39.5	19
NM-VT102-20	32	1.1/4	48.3	22
NM-VT102-24	40	1.1/2	54.5	22
NM-VT102-32	50	2	66.3	26

Reduction adapter BSP female



**VT 121**

code	size	thread size 1 [inch]	thread size 2 [inch]	length [mm]
NM-VT121-06-04	10	3/8	1/4	30
NM-VT121-08-04	15	1/2	1/4	34
NM-VT121-08-06	15	1/2	3/8	34
NM-VT121-12-06	20	3/4	3/8	38
NM-VT121-12-08	20	3/4	1/2	38
NM-VT121-16-08	25	1	1/2	42
NM-VT121-16-12	25	1	3/4	42
NM-VT121-20-12	32	1.1/4	3/4	48
NM-VT121-20-16	32	1.1/4	1	48
NM-VT121-24-16	40	1.1/2	1	52
NM-VT121-24-20	40	1.1/2	1.1/4	52
NM-VT121-32-24	50	2	1.1/2	58

Reduction nipple BSP female / BSPT male



**VT 115**

code	size	thread size 1 [inch]	thread size 2 [inch]	spanner size [mm]
NM-VT115-04-02	8	1/4	1/8	14
NM-VT115-06-02	10	3/8	1/8	19
NM-VT115-06-04	10	3/8	1/4	19
NM-VT115-08-04	15	1/2	1/4	22
NM-VT115-08-06	15	1/2	3/8	22
NM-VT115-12-04	20	3/4	1/4	30
NM-VT115-12-06	20	3/4	3/8	30
NM-VT115-12-08	20	3/4	1/2	30
NM-VT115-16-04	25	1	1/4	36
NM-VT115-16-06	25	1	3/8	36
NM-VT115-16-08	25	1	1/2	36
NM-VT115-16-12	25	1	3/4	36
NM-VT115-20-08	32	1.1/4	1/2	46
NM-VT115-20-12	32	1.1/4	3/4	46
NM-VT115-20-16	32	1.1/4	1	46
NM-VT115-24-12	40	1.1/2	3/4	50
NM-VT115-24-16	40	1.1/2	1	50
NM-VT115-24-20	40	1.1/2	1.1/4	50
NM-VT115-32-16	50	2	1	65
NM-VT115-32-20	50	2	1.1/4	65
NM-VT115-32-24	50	2	1.1/2	65

Blank cap BSP female



**VT 118**

code	thread size [inch]	spanner size [mm]
NM-VT118-04	1/4	19
NM-VT118-06	3/8	23
NM-VT118-08	1/2	27
NM-VT118-12	3/4	35
NM-VT118-16	1	41
NM-VT118-20	1.1/4	50
NM-VT118-24	1.1/2	56
NM-VT118-32	2	70
NM-VT118-40	2.1/2	84
NM-VT118-48	3	99

# INDUSTRIAL FITTINGS - fittings, connectors

## Stainless steel connectors - VT type

Nut BSP female



**VT 124**

code	thread size [inch]	spanner size [mm]
NM-VT124-04	1/4	22
NM-VT124-06	3/8	27
NM-VT124-08	1/2	32
NM-VT124-12	3/4	36
NM-VT124-16	1	46
NM-VT124-20	1.1/4	55
NM-VT124-24	1.1/2	60
NM-VT124-32	2	75
NM-VT124-40	2.1/2	95
NM-VT124-48	3	105
NM-VT124-64	4	135

Blank plug BSPT male



**VT 113**

code	thread size [inch]	spanner size [mm]
NM-VT113-04	1/4	9
NM-VT113-06	3/8	12
NM-VT113-08	1/2	14
NM-VT113-12	3/4	17
NM-VT113-16	1	19
NM-VT113-20	1.1/4	23
NM-VT113-24	1.1/2	32
NM-VT113-32	2	32

Hexagonal blank plug BSPT male



**VT 114**

code	thread size [inch]	spanner size [mm]
NM-VT114-04	1/4	17
NM-VT114-06	3/8	21
NM-VT114-08	1/2	23
NM-VT114-12	3/4	29
NM-VT114-16	1	36
NM-VT114-20	1.1/4	46
NM-VT114-24	1.1/2	50
NM-VT114-32	2	60
NM-VT114-40	2.1/2	80
NM-VT114-48	3	92

Pipe joint BSP female, cone seal



**VT 108**

code	thread size [inch]	joint length [mm]	spanner size [mm]
NM-VT108-04	1/4	32	28
NM-VT108-06	3/8	39	32
NM-VT108-08	1/2	41	41
NM-VT108-12	3/4	47	46
NM-VT108-16	1	52	60
NM-VT108-20	1.1/4	55	68
NM-VT108-24	1.1/2	60	78
NM-VT108-32	2	70	85
NM-VT108-40	2.1/2	90	110
NM-VT108-48	3	105	128

# INDUSTRIAL FITTINGS - fittings, connectors

## Stainless steel connectors - VT type

Pipe joint BSP female / BSPT male, cone seal



**VT 109**

code	thread size [inch]	joint length [mm]	spanner size [mm]
NM-VT109-04	1/4	43	30
NM-VT109-06	3/8	50	32
NM-VT109-08	1/2	57	41
NM-VT109-12	3/4	63	46
NM-VT109-16	1	74	55
NM-VT109-20	1.1/4	80	61
NM-VT109-24	1.1/2	84	75
NM-VT109-32	2	95	85
NM-VT109-40	2.1/2	110	109
NM-VT109-48	3	125	125

Pipe joint (butt weld), cone seal



**VT 110**

code	pipe I.D. [mm]	pipe O.D. [mm]	joint length [mm]	spanner size [mm]
NM-VT110-13.8	9	13.8	34	27
NM-VT110-17.0	12	17	40	28
NM-VT110-21.3	15	21.3	44	32
NM-VT110-26.9	20	26.9	55	41
NM-VT110-33.3	26	33.3	65	50
NM-VT110-42.4	35	42.4	67	60
NM-VT110-48.3	38	48.3	71	70
NM-VT110-60.3	50	60.3	75	85

# INDUSTRIAL FITTINGS - fittings, connectors

## Fittings and connectors - EC type

EC fittings are designed for low-pressure hoses (with maximum working pressure up to 30 bar, depending on diameter). Widely used for rubber and plastic hoses that are not reinforced, as well as with textile reinforcement or with external steel braid, etc. EC fittings are crimped (H type ferrules) with the use of low pressure crimping machines (see "MACHINES AND ACCESORIES").

Contrary to hydraulic fittings, EC fittings are not equipped with a collar joining ferrule with fitting. Widely used in flexible hose assemblies for sanitary, fuel, air installations, etc. EC ferrules can also be used for NiTO fittings as well as quick release couplings.

H type ferrule



code (galv. steel)	I.D. [mm]	bore diameter [mm]	length [mm]
EC-104038	8	5.6	17
EC-104039	9	4.7	17
EC-104040	9	5.7	17
EC-104050	10	6.7	17
EC-104051	11	6.7	17
EC-104060	11	7.7	17
EC-104062	12	7.7	20
EC-104063	13.5	7.7	20
EC-104065	15	7.6	20
EC-104064	12	10	20
EC-104080	13.5	10.2	20
EC-104084	14	10	20
EC-104085	15	10.2	20
EC-104105	15	11.8	20
EC-104100	16	11.9	20
EC-104107	17	11.9	21
EC-104118	18	13.9	21
EC-104112	19	14	26
EC-104120	20	14	26
EC-104156	21	15.7	25
EC-104122	22	15.7	32
EC-104123	23	17.2	32
EC-104124	24.5	17.2	36
EC-104126	26.5	19.7	32
EC-104128	28	20.7	34
EC-104130	30	24.2	32
EC-104132	32	23.7	34
EC-104133	33	24.2	34
EC-104136	34	25.9	34
EC-104134	32	27.9	34
EC-104137	34.5	27	35
EC-104138	36	27.5	35
EC-104140	38	28.3	35
EC-104142	40	30	40
EC-104145	45	35.1	37
EC-104147	51	41.3	43

H type ferrule



code (AISI 304)	I.D. [mm]	bore diameter [mm]	length [mm]
EC-104240	9	5.5	17
EC-104258	10	6.6	17
EC-104260	11	7.5	17
EC-104262	12	7.5	20
EC-104263	13.5	7.6	20
EC-104278	12.5	10	20
EC-104279	13	9.3	18
EC-104280	13.5	10.1	20
EC-104284	14	9.7	20
EC-104285	15	10	20
EC-104305	15	11.7	20
EC-104300	16	11.7	20
EC-104307	17	12.2	21
EC-104318	18	13.8	21
EC-104312	19	13.8	26
EC-104319	22	15.6	26
EC-104323	23	18.7	28
EC-104324	24.5	17	32
EC-104326	26.5	20	28
EC-104327	29	20.8	30
EC-104332	32	24	34
EC-104334	34.5	26	35
EC-104336	36	27.5	35
EC-104340	40	30.2	35
EC-104345	45	35.1	37
EC-104350	51	41	43
EC-104354	56	42.1	62
EC-104362	61	48	46

# INDUSTRIAL FITTINGS - fittings, connectors

## Fittings and connectors - EC type

H type ferrule - short



code (galv. steel)	I.D. [mm]	bore diameter [mm]	length [mm]
EC-104082	12.5	9.6	15
EC-104084	14	10.2	20
EC-104106	15	11.8	16
EC-104121	20	13.5	20
EC-104158	22	15.4	20

H type ferrule - short



code (AISI 304)	I.D. [mm]	bore diameter [mm]	length [mm]
EC-104261	12	9	15
EC-104281	13.5	9	15
EC-104320	20	13.5	20

HR type ferrule



code (galv. steel)	I.D. [mm]	length [mm]
EC-1104952	8	10
EC-1104953	9	10
EC-1104954	10	10
EC-1104955	11	10
EC-1104956	12	19

S type fitting  
(ball end. 60° cone seal. similar to DIN 7608)



code (galv. steel)	hose I.D. [mm]	use nut UM type
EC-105050	5	M10x1 / 1/8"
EC-105060	6	M12x1.5
EC-105068	6	M14x1.5 / 1/4"
EC-105069	6	M16x1.5 / 3/8"
EC-105080	8	M14x1.5 / 1/4"
EC-105081	8	M16x1.5 / 3/8"
EC-105100	10	M16x1.5 / 3/8"
EC-105102	10	M18x1.5
EC-105112	12	M18x1.5
EC-105113	12	1/2"
EC-105114	12	M22x1.5
EC-105150	15	M22x1.5
EC-105151	15	1/2"
EC-105156	15	M26x1.5
EC-105186	18	M26x1.5
EC-105188	20	M30x1.5
EC-105231	20	3/4"
EC-105233	20	1"
EC-105245	25	1"

SF type fitting (flat seal)



code (galv. steel)	hose I.D. [mm]	use nut UM type
EC-105205	5	M10x1 / 1/8"
EC-105206	6	M12x1.5 / 1/4"
EC-105208	8	M14x1.5 / 1/4"
EC-105210	10	M16x1.5 / 3/8"
EC-105212	12	M18x1.5
EC-105213	12	1/2"
EC-105215	15	M22x1.5
EC-105216	15	1/2"
EC-105226	15	M26x1.5
EC-105228	18	M26x1.5
EC-105230	20	3/4"
EC-105232	20	1"
EC-105243	25	1"

# INDUSTRIAL FITTINGS - fittings, connectors

## Fittings and connectors - EC type

Screw nut UM for S and SF fittings



code (galv. steel)	thread size	spanner size [mm]
EC-105510	M10x1	12
EC-105512	M12x1.5	14
EC-105514	M14x1.5	17
EC-105516	M16x1.5	19
EC-105518	M18x1.5	22
EC-105522	M22x1.5	27
EC-105526	M26x1.5	32
EC-105528	M30x1.5	36
EC-105529	M30x12	36
EC-105605	1/8" BSP	14
EC-105608	1/4" BSP	17
EC-105610	3/8" BSP	19
EC-105612	1/2" BSP	24
EC-105620	3/4" BSP	30
EC-105622	1" BSP	36
EC-105609	1/4" BSP (left)	17
EC-105611	3/8" BSP (left)	19

LST type soldering fitting with male metric thread  
(60° cone seal)



code (galv. steel)	pipe O.D. [mm]	use nut UM type
EC-109705	5	M10x1
EC-109706	6	M12x1.5
EC-109708	8	M14x1.5
EC-109710	10	M16x1.5
EC-109712	12	M18x1.5
EC-109715	15	M22x1.5
EC-109718	18	M26x1.5

90° elbow hose fitting. RBU type  
(ball end. 60° cone seal)



code (galv. steel)	hose I.D. [mm]	thread size [mm]
EC-108210	5	M10x1
EC-108212	6	M12x1.5
EC-108232	6	M14x1.5
EC-108233	6	M16x1.5
EC-108214	8	M14x1.5
EC-108234	8	M16x1.5
EC-108216	10	M16x1.5
EC-108238	10	M18x1.5
EC-108240	12	M16x1.5
EC-108218	12	M18x1.5
EC-108222	15	M22x1.5
EC-108226	15	M26x1.5


90° elbow hose fitting. RBU type  
(ball end. 60° cone seal)





code (galv. steel)	hose I.D. [mm]	thread size [inch]
EC-108248	5	1/8
EC-108249	6	1/4
EC-108250	8	1/4
EC-108251	10	3/8
EC-108252	12	1/2
EC-108253	15	1/2


# INDUSTRIAL FITTINGS - fittings, connectors

## Fittings and connectors - EC type

45° elbow hose fitting, RBU type (ball end. 60° cone seal)		
		
code (galv. steel)	hose I.D. [mm]	thread size [mm]
EC-108211	5	M10x1
EC-108213	6	M12x1.5
EC-108215	8	M14x1.5
EC-108217	10	M16x1.5
EC-108219	12	M18x1.5
EC-108223	15	M22x1.5
EC-108227	18	M26x1.5

45° elbow hose fitting, RBU type (ball end. 60° cone seal)		
		
code (galv. steel)	hose I.D. [mm]	thread size [inch]
EC-108258	5	1/8
EC-108259	6	1/4
EC-108260	8	1/4
EC-108261	10	3/8
EC-108262	12	1/2
EC-108263	15	1/2

SA type fitting with metric male thread and hose tail (24° cone seal)			
			
code (galv. steel)	hose I.D. [mm]	pipe O.D. [mm]	thread size [mm]
EC-110205	5	5	M10x1
EC-110206	6	6	M12x1.5
EC-110203	6	8	M14x1.5
EC-110208	8	8	M14x1.5
EC-110204	8	10	M16x1.5
EC-110209	10	8	M14x1.5
EC-110210	10	10	M16x1.5
EC-110212	12	12	M18x1.5
EC-110215	15	15	M22x1.5
EC-110216	15	16	M22x1.5
EC-110217	15	18	M26x1.5
EC-110218	18	18	M26x1.5

SA type fitting with male metric thread and hose tail (60° cone seal or flat seal)		
		
code (galv. steel)	hose I.D. [mm]	thread size [mm]
EC-110005	6	M10x1 (60°)
EC-110006	6	M12x1.5 (60°)
EC-110008	8	M14x1.5 (60°)
EC-110010	10	M16x1.5 (60°)
EC-110012	12	M18x1.5 (60°)
EC-110122	15	M22x1.5
EC-110125	15	M26x1.5
EC-110126	18	M26x1.5

# INDUSTRIAL FITTINGS - fittings, connectors

## Fittings and connectors - EC type

MS-SA type fitting with male BSP thread and hose tail  
(60° cone seal)



code (brass)	hose I.D. [mm]	thread size [inch]
EC-110305	5	1/8
EC-110304	6	1/8
EC-110306	6	1/4
EC-110316	6	3/8
EC-110321	6	1/2
EC-110308	8	1/4
EC-110317	8	3/8
EC-110331	10	1/4
EC-110310	10	3/8
EC-110332	10	1/2
EC-110312	12	1/2
EC-110323	12	3/4
EC-110318	15	3/8
EC-110315	15	1/2

LST type soldering fitting with male metric thread  
(60° cone seal)



code (galv. steel)	pipe O.D. [mm]	thread size [mm]
EC-109805	5	M10x1
EC-109806	6	M12x1.5
EC-109808	8	M14x1.5
EC-109810	10	M16x1.5
EC-109812	12	M18x1.5
EC-109815	15	M22x1.5
EC-109818	18	M26x1.5

BANJO straight fitting RS type



code (galv. steel)	hose I.D. [mm]	bore diameter [mm]
EC-106006	5	6 mm
EC-106008	5	8 mm
EC-106010	6	10 mm = 1/8"
EC-106012	6	12 mm
EC-106014	6	14 mm = 1/4"
EC-106110	8	10 mm = 1/8"
EC-106112	8	12 mm
EC-106114	8	14 mm = 1/4"
EC-106212	10	12 mm
EC-106214	10	14 mm = 1/4"
EC-106216	10	16 mm
EC-106218	10	18 mm
EC-106314	12	14 mm = 1/4"
EC-106316	12	16 mm
EC-106318	12	18 mm
EC-106418	15	18 mm
EC-106422	15	22 mm = 1/2"
EC-106426	15	26 mm
EC-106522	18	22 mm = 1/2"
EC-106526	18	26 mm
EC-106015	6	1/4"
EC-106113	8	1/4"
EC-106116	8	3/8"
EC-106217	10	3/8"
EC-106313	12	3/8"

BANJO double fitting DRS type



code (galv. steel)	hose I.D. [mm]	bore diameter
EC-106808	5	8 mm
EC-106810	6	10 mm = 1/8"
EC-106812	8	12 mm
EC-106814	10	14 mm = 1/4"

90° BANJO elbow RBR type



code (galv. steel)	hose I.D. [mm]	bore diameter [mm]
EC-108008	5	8 mm
EC-108010	6	10 mm = 1/8"
EC-108012	8	12 mm
EC-108014	10	14 mm = 1/4"
EC-108016	12	16



# INDUSTRIAL FITTINGS - fittings, connectors

## Fittings and connectors - EC type

Soldering BANJO fitting RL type (similar to DIN 7642)



code (galv. steel)	pipe O.D. [mm]	bore diameter [mm]
EC-109008	5	8
EC-109010	6	10
EC-109012	6	12
EC-109014	6	14
EC-109112	8	12
EC-109114	8	14
EC-109213	10	12
EC-109214	10	14
EC-109216	10	16
EC-109316	12	16
EC-109318	12	18
EC-109418	15	18
EC-109422	18	22
EC-109426	18	26
EC-109526	22	26
EC-109530	28	30

BANJO R-G type adapter with metric male thread,  
24° cone seal



code (galv. steel)	bore diameter [mm]	pipe O.D. [mm]	thread size [mm]
EC-106950	8	5	M10x1
EC-106952	10	6	M12x1.5
EC-106954	12	8	M14x1.5
EC-106956	14	8	M14x1.5
EC-106958	14	10	M16x1.5
EC-106960	16	12	M18x1.5
EC-106961	18	12	M18x1.5
EC-106962	18	15	M22x1.5
EC-106964	22	15	M22x1.5
EC-106963	22	18	M26x1.5

BANJO double soldering fitting DRL type



code (galv. steel)	pipe O.D. [mm]	bore diameter [mm]
EC-109608	5	8
EC-109610	6	10
EC-109612	8	12
EC-109614	10	14
EC-109616	12	16

BANJO R-G type adapter with metric male thread,  
60° cone seal



code (galv. steel)	bore diameter [mm]	thread size
EC-106908	8	M10x1
EC-106910	10	M12x1.5
EC-106912	12	M14x1.5
EC-106913	14	1/4" BSP
EC-106914	14	M14x1.5
EC-106915	14	M16x1.5
EC-106916	16	M18x1.5
EC-106918	18	M22x1.5

Double hollow screw for BANJO DHS type



code (galv. steel)	thread size [mm]	length without head [mm]	spanner size [mm]
EC-107108	M8x1	27	12
EC-107110	M10x1	30	14
EC-107112	M12x1.5	38	17
EC-107114	M14x1.5	42	19
EC-107116	M16x1.5	46	22
EC-107118	M18x1.5	54	24
EC-107122	M22x1.5	66	27
EC-107126	M26x1.5	77	32

# INDUSTRIAL FITTINGS - fittings, connectors

## Fittings and connectors - EC type

Hollow screw for BANJO HS type (similar to DIN 7643)



code (galv. steel)	thread size	length without head [mm]	spanner size [mm]
EC-107006	M6x1	17	11
EC-107008	M8x1	17	12
EC-107009	M8x1.25	17	12
EC-107010	M10x1	19	14
EC-107011	M10x1.5	19	14
EC-107012	M12x1.5	24	17
EC-107014	M14x1.5	26	19
EC-107016	M16x1.5	28	22
EC-107018	M18x1.5	32	24
EC-107022	M22x1.5	39	27
EC-107026	M26x1.5	45	32
EC-107030	M30x1.5	51	36
EC-107040	1/8"	19	14
EC-107041	1/4"	26	19
EC-107042	3/8"	28	22
EC-107043	1/2"	39	27

BE-pipe fitting RST type



code (galv. steel)	hose I.D. [mm]	pipe O.D. [mm]
EC-108504	4	4
EC-108505	5	5
EC-108506	6	6
EC-108508	8	8
EC-108510	10	10
EC-108512	12	12
EC-108515	15	15
EC-108518	18	18

T connector TSM type



code (galv. steel)	agreed nominal diameter DN	hose I.D. [mm]
EC-127829	2	4
EC-127830	4	6
EC-127831	6	8
EC-127832	8	10
EC-127833	10	12

90° elbow fitting RBS type



code (galv. steel)	hose I.D. [mm]	pipe O.D. [mm]
EC-108304	4	4
EC-108305	5	5
EC-108306	6	6
EC-108308	8	8
EC-108310	10	10
EC-108312	12	12
EC-108315	15	15
EC-108318	18	18

45° elbow fitting RBS type



code (galv. steel)	hose I.D. [mm]	pipe O.D. [mm]
EC-108307	5.5	6
EC-108309	7.5	8
EC-108311	9.5	10
EC-108313	11.5	12
EC-108316	14.5	15

# INDUSTRIAL FITTINGS - fittings, connectors

## Fittings and connectors - EC type

Adapter with metric male thread. DST type, 60° cone



code (galv. steel)	thread size [mm]	spanner size [mm]
EC-122010	M10x1	14
EC-122012	M12x1.5	14
EC-122014	M14x1.5	19
EC-122016	M16x1.5	19
EC-122018	M18x1.5	19
EC-122022	M22x1.5	27
EC-122026	M26x1.5	32

Reduction adapter with metric male thread, RDST type, 60° cone



code (galv. steel)	thread size [mm]	thread size [mm]	spanner size [mm]
EC-122050	M8x1	M10x1	12
EC-122052	M10x1	M12x1.5	17
EC-122054	M12x1.5	M14x1.5	17
EC-122056	M12x1.5	M16x1.5	22
EC-122060	M14x1.5	M16x1.5	22
EC-122065	M16x1.5	M18x1.5	24
EC-122070*	M18x1.5	M22x1.5	27

\* - 24° cone

Adapter with BSP male thread, DST type, 60° cone



code (brass)	thread size [inch]	spanner size [mm]
EC-122090	1/8	14
EC-122091	1/4	17
EC-122092	3/8	19
EC-122093	1/2	24
EC-122094	3/4	32
EC-122095	1	36
EC-122096	1.1/4	42
EC-122097	1.1/2	50
EC-122098	2	62

Reduction adapter with BSP male thread, RDST type, 60° cone



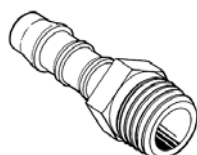
code (brass)	thread size [inch]	thread size [inch]	spanner size [mm]
EC-122075	1/8	1/4	17
EC-122076	1/8	3/8	19
EC-122077	1/4	3/8	19
EC-122078	1/4	1/2	24
EC-122079	3/8	1/2	24
EC-122080	3/8	3/4	32
EC-122081	1/2	3/4	32
EC-122082	1/2	1	36
EC-122083	3/4	1	36
EC-122084	1	1.1/4	42
EC-122085	1	1.1/2	50
EC-122086	1.1/4	1.1/2	50
EC-122087	1.1/2	2	62

# INDUSTRIAL FITTINGS - fittings, connectors

## Fittings and connectors - NA type

Fittings and hose connectors designed for control systems, liquid and gas transportation systems, vacuum applications, etc. Fittings made of polyamide (PA6), hose connectors of acetal polyoxymethylene (POM). Fittings with NPT thread are available on request.

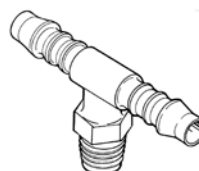
Straight fitting with male thread



**710**

code (polyamide)	thread size	hose I.D. [mm]	flow DN [mm]
NA-7100052003	M5	3	2.5
NA-7100001004	M8x1	4	2.5
NA-7100002004	M8x1.25	4	2.5
NA-7100003004	M10x1	4	2.5
NA-7100004004	M12x1.5	4	2.5
NA-7100005004	M14x1.5	4	2.5
NA-7100010004	1/8" BSPT	4	2.5
NA-7100011004	1/4" BSPT	4	2.5
NA-7100004005	M12x1.5	5	3
NA-7100005005	M14x1.5	5	3
NA-7100011005	1/4" BSPT	5	3
NA-7100003006	M10x1	6	4
NA-7100004006	M12x1.5	6	4
NA-7100005006	M14x1.5	6	4
NA-7100010006	1/8" BSPT	6	4
NA-7100011006	1/4" BSPT	6	4
NA-7100012006	3/8" BSPT	6	4
NA-7100003008	M10x1	8	5.6
NA-7100004008	M12x1.5	8	5.6
NA-7100005008	M14x1.5	8	5.6
NA-7100007008	M18x1.5	8	5.6
NA-7100049008	M22x1.5	8	5.6
NA-7100009008	M26x1.5	8	5.6
NA-7100010008	1/8" BSPT	8	5.6
NA-7100011008	1/4" BSPT	8	5.6
NA-7100012008	3/8" BSPT	8	5.6
NA-7100013008	1/2" BSPT	8	5.6
NA-7100004010	M12x1.5	10	7
NA-7100005010	M14x1.5	10	7
NA-7100006010	M16x1.5	10	7
NA-7100011010	1/4" BSPT	10	7
NA-7100012010	3/8" BSPT	10	7
NA-7100006012	M16x1.5	12	8.6
NA-7100007012	M18x1.5	12	8.6
NA-7100049012	M22x1.5	12	8.6
NA-7100009012	M26x1.5	12	8.6
NA-7100012012	3/8" BSPT	12	8.6
NA-7100013012	1/2" BSPT	12	8.6
NA-7100007014	M18x1.5	14	10
NA-7100008014	M20x1.5	14	10
NA-7100019014	M22x1.5	14	10
NA-7100012014	3/8" BSPT	14	10
NA-7100013014	1/2" BSPT	14	10
NA-7100009016	M26x1.5	16	12
NA-7100013016	1/2" BSPT	16	12
NA-7100014016	3/4" BSPT	16	12
NA-7100009019	M26x1.5	19	15
NA-7100014019	3/4" BSPT	19	15
NA-7100015025	1" BSPT	25	21

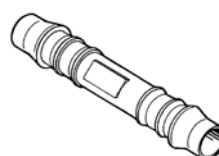
Tee connector



**720**

code (polyamide)	thread size	hose I.D. [mm]	flow DN [mm]
NA-7200001004	M8x1	4	2.5
NA-7200003004	M10x1	4	2.5
NA-7200004004	M12x1.5	4	2.9
NA-7200005004	M14x1.5	4	2.5
NA-7200010004	1/8 BSPT	4	2.5
NA-7200011004	1/4 BSPT	4	2.5
NA-7200003006	M10x1	6	4
NA-7200004006	M12x1.5	6	4
NA-7200010006	1/8 BSPT	6	4
NA-7200011006	1/4 BSPT	6	4
NA-7200004008	M12x1.5	8	5.6
NA-7200005008	M14x1.5	8	5.6
NA-7200011008	1/4 BSPT	8	5.6
NA-7200012010	3/8 BSPT	10	7

Straight hose connector



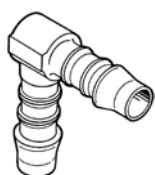
**750**

code (POM)	hose I.D. [mm]	flow DN [mm]
NA-7500000003	3	2.5
NA-7500000004	4	2.7
NA-7500000005	5	3
NA-7500000006	6	4
NA-7500000008	8	5.6
NA-7500000010	10	7
NA-7500000012	12	8.6
NA-7500000013	13	8.6
NA-7500000014	14	10
NA-7500000016	16	12
NA-7500000019	19	15
NA-7500000025	25	21

# INDUSTRIAL FITTINGS - fittings, connectors

## Fittings and connectors - NA type

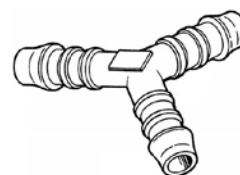
90° elbow hose connector



**762**

code (POM)	hose I.D. [mm]	flow DN [mm]
NA-7620000003	3	2.5
NA-7620000004	4	2.5
NA-7620000005	5	3
NA-7620000006	6	4
NA-7620000008	8	5.6
NA-7620000010	10	7
NA-7620000012	12	8.6
NA-7620000013	13	8.6
NA-7620000014	14	10
NA-7620000015	15	11
NA-7620000016	16	12
NA-7620000019	19	15
NA-7620000025	25	21

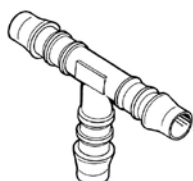
Tee (Y-shaped) hose connector



**770**

code (POM)	hose I.D. [mm]	flow DN [mm]
NA-7700000003	3	2.5
NA-7700000004	4	2.5
NA-7700000005	5	3
NA-7700000006	6	4
NA-7700000008	8	5.6
NA-7700000010	10	7
NA-7700000012	12	8.6
NA-7700000013	13	9
NA-7700000014	14	10
NA-7700000016	16	12
NA-7700000019	19	15

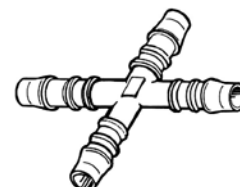
Tee (T-shaped) hose connector



**760**

code (POM)	hose I.D. [mm]	flow DN [mm]
NA-7600000003	3	2.5
NA-7600000004	4	2.7
NA-7600000005	5	3
NA-7600000006	6	4
NA-7600000007	7	5
NA-7600000008	8	5.6
NA-7600000010	10	7
NA-7600000012	12	8.6
NA-7600000013	13	8.6
NA-7600000014	14	10
NA-7600000015	15	11
NA-7600000016	16	12
NA-7600000019	19	15
NA-7600000025	25	21

Cross hose connector




**772**

code (POM)	hose I.D. [mm]	flow DN [mm]
NA-7720000004	4	2.9
NA-7720000005	5	3
NA-7720000006	6	4
NA-7720000012	12	8.6


# INDUSTRIAL FITTINGS - fittings, connectors

## Fittings and hose connectors - EM type (3T series) PN 10 bar


Fittings and hose connectors made of polypropylene, PVDF, PTFE are widely used in laboratory and medicine as well as pharmaceutical, chemical and food industry. Designed for hoses made of plastic materials (see chapters: TYGON®, silicone hoses). Available with BSP or NPT threads.

description	code (polypropylene)	code (PVDF)	code (PTFE)	thread size [inch]	hose I.D. [mm]
<b>Straight fitting BSP female</b> 	EM-PWB3T-02-04-PP	EM-PWB3T-02-04-PV	EM-PWB3T-02-04-PT	1/8	4
	EM-PWB3T-04-06-PP	EM-PWB3T-04-06-PV	-	1/4	6
	EM-PWB3T-06-08-PP	EM-PWB3T-06-08-PV	-	3/8	8
	EM-PWB3T-06-10-PP	EM-PWB3T-06-10-PV	EM-PWB3T-06-10-PT	3/8	10
	EM-PWB3T-08-12-PP	EM-PWB3T-08-12-PV	-	1/2	12
	EM-PWB3T-08-14-PP	EM-PWB3T-08-14-PV	-	1/2	14
	EM-PWB3T-08-16-PP	-	EM-PWB3T-08-16-PT	1/2	16


- exemplary code for NPT thread version: EM-PWN-02-04-PP

description	code (polypropylene)	code (PVDF)	code (PTFE)	thread size [inch]	hose I.D. [mm]
<b>Straight fitting BSP male</b> 	EM-PZB3T-02-04-PP	EM-PZB3T-02-04-PV	EM-PZB3T-02-04-PT	1/8	4
	EM-PZB3T-04-06-PP	EM-PZB3T-04-06-PV	EM-PZB3T-04-06-PT	1/4	6
	EM-PZB3T-06-08-PP	EM-PZB3T-06-08-PV	EM-PZB3T-06-08-PT	3/8	8
	EM-PZB3T-06-10-PP	EM-PZB3T-06-10-PV	EM-PZB3T-06-10-PT	3/8	10
	EM-PZB3T-08-12-PP	EM-PZB3T-08-12-PV	EM-PZB3T-08-12-PT	1/2	12
	EM-PZB3T-08-14-PP	EM-PZB3T-08-14-PV	EM-PZB3T-08-14-PT	1/2	14
	EM-PZB3T-08-16-PP	EM-PZB3T-08-16-PV	EM-PZB3T-08-16-PT	1/2	16

- exemplary code for NPT thread version: EM-PZN-02-04-PP

description	code (polypropylene)	code (PVDF)	code (PTFE)	thread size [inch]	hose I.D. [mm]
<b>90° elbow fitting BSP female</b> 	EM-KWB3T-02-04-PP	-	-	1/8	4
	EM-KWB3T-04-06-PP	EM-KWB3T-04-06-PV	-	1/4	6
	EM-KWB3T-06-08-PP	EM-KWB3T-06-08-PV	-	3/8	8
	EM-KWB3T-06-10-PP	-	-	3/8	10
	EM-KWB3T-08-12-PP	EM-KWB3T-08-12-PV	-	1/2	12


- exemplary code for NPT thread version: EM-KWN-02-04-PP


description	code (polypropylene)	code (PVDF)	code (PTFE)	thread size [inch]	hose I.D. [mm]
<b>90° elbow fitting BSP male</b> 	EM-KZB3T-02-04-PP	EM-KZB3T-02-04-PV	EM-KZB3T-02-04-PT	1/8	4
	EM-KZB3T-04-06-PP	EM-KZB3T-04-06-PV	EM-KZB3T-04-06-PT	1/4	6
	EM-KZB3T-06-08-PP	EM-KZB3T-06-08-PV	EM-KZB3T-06-08-PT	3/8	8
	EM-KZB3T-06-10-PP	EM-KZB3T-06-10-PV	EM-KZB3T-06-10-PT	3/8	10
	EM-KZB3T-08-12-PP	EM-KZB3T-08-12-PV	-	1/2	12


- exemplary code for NPT thread version: EM-KZN-02-04PP

# INDUSTRIAL FITTINGS - fittings, connectors

## Fittings and hose connectors - EM type (3T series) PN 10 bar

description	code (polypropylene)	code (PVDF)	code (PTFE)	hose I.D. [mm]
Straight hose connector 	EM-LP3T-04-PP	EM-LP3T-04-PV	EM-LP3T-04-PT	4
	EM-LP3T-06-PP	EM-LP3T-06-PV	EM-LP3T-06-PT	6
	EM-LP3T-08-PP	EM-LP3T-08-PV	EM-LP3T-08-PT	8
	EM-LP3T-10-PP	EM-LP3T-10-PV	EM-LP3T-10-PT	10
	EM-LP3T-12-PP	EM-LP3T-12-PV	EM-LP3T-12-PT	12


description	code (polypropylene)	code (PVDF)	code (PTFE)	hose I.D. [mm]
90° elbow hose connector 	EM-LK3T-04-PP	EM-LK3T-04-PV	EM-LK3T-04-PT	4
	EM-LK3T-06-PP	EM-LK3T-06-PV	EM-LK3T-06-PT	6
	EM-LK3T-08-PP	EM-LK3T-08-PV	EM-LK3T-08-PT	8
	EM-LK3T-10-PP	EM-LK3T-10-PV	EM-LK3T-10-PT	10
	EM-LK3T-12-PP	EM-LK3T-12-PV	EM-LK3T-12-PT	12


description	code (polypropylene)	code (PVDF)	code (PTFE)	hose I.D. [mm]
Tee hose connector 	EM-LT3T-04-PP	EM-LT3T-04-PV	EM-LT3T-04-PT	4
	EM-LT3T-06-PP	EM-LT3T-06-PV	EM-LT3T-06-PT	6
	EM-LT3T-08-PP	EM-LT3T-08-PV	EM-LT3T-08-PT	8
	EM-LT3T-10-PP	EM-LT3T-10-PV	EM-LT3T-10-PT	10
	EM-LT3T-12-PP	EM-LT3T-12-PV	EM-LT3T-12-PT	12


# INDUSTRIAL FITTINGS - fittings, connectors


## Fittings and hose connectors - EM type (3F series) PN 10 bar


Plastic fittings and hose connectors made of polypropylene and PVDF are widely used in laboratory and medicine as well as pharmaceutical, chemical and food industry. Available with BSP, NPT and metric threads.

description	code (polypropylene)	code (PVDF)	thread size [inch]
Straight connector BSP male 	EM-LPZZB3F-02-PP	EM-LPZZB3F-02-PV	1/8
	EM-LPZZB3F-04-PP	EM-LPZZB3F-04-PV	1/4
	EM-LPZZB3F-06-PP	EM-LPZZB3F-06-PV	3/8
	EM-LPZZB3F-08-PP	EM-LPZZB3F-08-PV	1/2
	EM-LPZZB3F-12-PP	EM-LPZZB3F-12-PV	3/4
	EM-LPZZB3F-16-PP	EM-LPZZB3F-16-PV	1
	EM-LPZZB3F-20-PP	EM-LPZZB3F-20-PV	1.1/4
	EM-LPZZB3F-24-PP	EM-LPZZB3F-24-PV	1.1/2
	-	EM-LPZZB3F-32-PV	2

description	code (polypropylene)	code (PVDF)	thread size [inch]
Straight connector BSP male / female 	EM-LPZWB3F-02-PP	EM-LPZWB3F-02-PV	1/8
	EM-LPZWB3F-04-PP	EM-LPZWB3F-04-PV	1/4
	EM-LPZWB3F-06-PP	EM-LPZWB3F-06-PV	3/8
	EM-LPZWB3F-08-PP	EM-LPZWB3F-08-PV	1/2
	EM-LPZWB3F-12-PP	EM-LPZWB3F-12-PV	3/4
	EM-LPZWB3F-16-PP	EM-LPZWB3F-16-PV	1
	EM-LPZWB3F-20-PP	EM-LPZWB3F-20-PV	1.1/4
	EM-LPZWB3F-24-PP	EM-LPZWB3F-24-PV	1.1/2
	EM-LPZWB3F-32-PP	-	2

description	code (polypropylene)	code (PVDF)	thread size [inch]
Straight connector BSP fe- male 	EM-LPWVB3F-02-PP	EM-LPWVB3F-02-PV	1/8
	EM-LPWVB3F-04-PP	EM-LPWVB3F-04-PV	1/4
	EM-LPWVB3F-06-PP	EM-LPWVB3F-06-PV	3/8
	EM-LPWVB3F-08-PP	EM-LPWVB3F-08-PV	1/2
	EM-LPWVB3F-12-PP	EM-LPWVB3F-12-PV	3/4
	EM-LPWVB3F-16-PP	EM-LPWVB3F-16-PV	1
	EM-LPWVB3F-20-PP	-	1.1/4
	EM-LPWVB3F-24-PP	-	1.1/2
	EM-LPWVB3F-32-PP	-	2

description	code (polypropylene)	code (PVDF)	thread size [inch]
Blank plug BSP male 	EM-ZZB3F-02-PP	EM-ZZB3F-02-PV	1/8
	EM-ZZB3F-04-PP	EM-ZZB3F-04-PV	1/4
	EM-ZZB3F-06-PP	EM-ZZB3F-06-PV	3/8
	EM-ZZB3F-08-PP	EM-ZZB3F-08-PV	1/2
	EM-ZZB3F-12-PP	EM-ZZB3F-12-PV	3/4
	EM-ZZB3F-16-PP	EM-ZZB3F-16-PV	1
	EM-ZZB3F-20-PP	-	1.1/4
	EM-ZZB3F-24-PP	-	1.1/2


description	code (polypropylene)	code (PVDF)	thread size [inch]
Blank cap BSP female 	EM-ZWB3F-02-PP	EM-ZWB3F-02-PV	1/8
	EM-ZWB3F-04-PP	EM-ZWB3F-04-PV	1/4
	EM-ZWB3F-06-PP	EM-ZWB3F-06-PV	3/8
	EM-ZWB3F-08-PP	EM-ZWB3F-08-PV	1/2
	EM-ZWB3F-12-PP	EM-ZWB3F-12-PV	3/4
	EM-ZWB3F-16-PP	-	1
	-	EM-ZWB3F-20-PV	1.1/4
	EM-ZWB3F-24-PP	-	1.1/2





# INDUSTRIAL FITTINGS - fittings, connectors


## Fittings and hose connectors - EM type (1A series) PN 10 bar

Plastic fittings and hose connectors made of polypropylene and PVDF are widely used in laboratory and medicine as well as pharmaceutical, chemical and food industry. Designed for metric plastic hoses (see chapters: PTFE hoses, Pneumatics). Available with BSP and NPT threads.

description	code (polypropylene)	code (PVDF)	hose I.D. x O.D [mm]
<b>Straight connector</b> 	EM-LP1A-04X06-PP	EM-LP1A-04X06-PV	4x6
	EM-LP1A-05X08-PP	EM-LP1A-05X08-PV	5x8
	EM-LP1A-06X08-PP	EM-LP1A-06X08-PV	6x8
	-	EM-LP1A-06X09-PV	6x9
	EM-LP1A-06X10-PP	EM-LP1A-06X10-PV	6x10
	EM-LP1A-08X10-PP	EM-LP1A-08X10-PV	8x10
	EM-LP1A-08X12-PP	EM-LP1A-08X12-PV	8x12
	EM-LP1A-10X12-PP	EM-LP1A-10X12-PV	10x12
	EM-LP1A-10X14-PP	EM-LP1A-10X14-PV	10x14
	EM-LP1A-12X14-PP	EM-LP1A-12X14-PV	12x14
	EM-LP1A-12X16-PP	EM-LP1A-12X16-PV	12x16

description	code (polypropylene)	code (PVDF)	hose I.D. x O.D [mm]
<b>Straight reduction connector</b> 	EM-LPR1A-06X08-04X06-PP	EM-LPR1A-06X08-04X06-PV	6x8 / 4x6
	EM-LPR1A-06X08-05X08-PP	EM-LPR1A-06X08-05X08-PV	6x8 / 5x8
	EM-LPR1A-06X08-08X10-PP	EM-LPR1A-06X08-08X10-PV	6x8 / 8x10
	EM-LPR1A-06X10-04X06-PP	EM-LPR1A-06X10-04X06-PV	6x10 / 4x6
	-	EM-LPR1A-06X10-06X08-PV	6x10 / 6x8
	EM-LPR1A-08X10-04X06-PP	EM-LPR1A-08X10-04X06-PV	8x10 / 4x6
	EM-LPR1A-08X10-10X12-PP	EM-LPR1A-08X10-10X12-PV	8x10 / 10x12
	EM-LPR1A-10X12-04X06-PP	EM-LPR1A-10X12-04X06-PV	10x12 / 4x6
	EM-LPR1A-10X12-06X08-PP	EM-LPR1A-10X12-06X08-PV	10x12 / 6x8
	EM-LPR1A-10X12-12X14-PP	EM-LPR1A-10X12-12X14-PV	10x12 / 12x14


description	code (polypropylene)	code (PVDF)	thread size [inch]	hose I.D. x O.D [mm]
<b>Straight fitting with BSP male</b> 	EM-KZB1A-02-04X06-PP	EM-KZB1A-02-04X06-PV	1/8	4x6
	EM-KZB1A-04-04X06-PP	EM-KZB1A-04-04X06-PV	1/4	4x6
	EM-KZB1A-06-04X06-PP	EM-KZB1A-06-04X06-PV	3/8	4x6
	EM-KZB1A-08-04X06-PP	EM-KZB1A-08-04X06-PV	1/2	4x6
	EM-KZB1A-02-06X08-PP	EM-KZB1A-02-06X08-PV	1/8	6x8
	EM-KZB1A-04-06X08-PP	EM-KZB1A-04-06X08-PV	1/4	6x8
	EM-KZB1A-06-06X08-PP	EM-KZB1A-06-06X08-PV	3/8	6x8
	EM-KZB1A-08-06X08-PP	EM-KZB1A-08-06X08-PV	1/2	6x8
	EM-KZB1A-02-08X10-PP	EM-KZB1A-02-08X10-PV	1/8	8x10
	EM-KZB1A-04-08X10-PP	EM-KZB1A-04-08X10-PV	1/4	8x10
	EM-KZB1A-06-08X10-PP	EM-KZB1A-06-08X10-PV	3/8	8x10
	EM-KZB1A-08-08X10-PP	EM-KZB1A-08-08X10-PV	1/2	8x10


description	code (polypropylene)	code (PVDF)	thread size [inch]	hose I.D. x O.D [mm]
<b>Straight fitting with BSP female</b> 	EM-KWB1A-02-04X06-PP	EM-KWB1A-02-04X06-PV	1/8	4x6
	EM-KWB1A-04-04X06-PP	EM-KWB1A-04-04X06-PV	1/4	4x6
	EM-KWB1A-06-04X06-PP	EM-KWB1A-06-04X06-PV	3/8	4x6
	EM-KWB1A-08-04X06-PP	EM-KWB1A-08-04X06-PV	1/2	4x6
	EM-KWB1A-02-06X08-PP	EM-KWB1A-02-06X08-PV	1/8	6x8
	EM-KWB1A-04-06X08-PP	EM-KWB1A-04-06X08-PV	1/4	6x8
	EM-KWB1A-06-06X08-PP	EM-KWB1A-06-06X08-PV	3/8	6x8
	EM-KWB1A-08-06X08-PP	EM-KWB1A-08-06X08-PV	1/2	6x8
	EM-KWB1A-02-08X10-PP	EM-KWB1A-02-08X10-PV	1/8	8x10
	EM-KWB1A-04-08X10-PP	EM-KWB1A-04-08X10-PV	1/4	8x10
	EM-KWB1A-06-08X10-PP	EM-KWB1A-06-08X10-PV	3/8	8x10
	EM-KWB1A-08-08X10-PP	EM-KWB1A-08-08X10-PV	1/2	8x10


# INDUSTRIAL FITTINGS - fittings, connectors

## Fittings and hose connectors - EM type (1B series) PN 10 bar

Plastic fittings and hose connectors made of polypropylene and PVDF are widely used in laboratory and medicine as well as pharmaceutical, chemical and food industry. Designed for plastic hoses reinforced with braid. Available with BSP and NPT threads.

description	code (polypropylene)	code (PVDF)	hose I.D. x O.D. [mm]
<b>Straight connector</b> 	EM-LP1B-04X10-PP	EM-LP1B-04X10-PV	4x10
	EM-LP1B-05X11-PP	EM-LP1B-05X11-PV	5x11
	EM-LP1B-06X12-PP	EM-LP1B-06X12-PV	6x12
	EM-LP1B-08X14-PP	EM-LP1B-08X14-PV	8x14
	EM-LP1B-09X15-PP	EM-LP1B-09X15-PV	9x15
	EM-LP1B-10X16-PP	EM-LP1B-10X16-PV	10x16
	EM-LP1B-12X18-PP	EM-LP1B-12X18-PV	12x18
	EM-LP1B-13X19-PP	EM-LP1B-13X19-PV	13x19
	EM-LP1B-13X20-PP	EM-LP1B-13X20-PV	13x20
	EM-LP1B-19X27-PP	EM-LP1B-19X27-PV	19x27


description	code (polypropylene)	code (PVDF)	thread size [inch]	hose I.D. x O.D. [mm]
<b>Straight fitting with BSP male</b> 	EM-KZB1B-02-10-PP	EM-KZB1B-02-10-PV	1/8	4x10
	EM-KZB1B-04-10-PP	EM-KZB1B-04-10-PV	1/4	4x10
	EM-KZB1B-06-10-PP	EM-KZB1B-06-10-PV	3/8	4x10
	EM-KZB1B-08-10-PP	EM-KZB1B-08-10-PV	1/2	4x10
	EM-KZB1B-12-10-PP	-	3/4	4x10
	EM-KZB1B-02-12-PP	EM-KZB1B-02-12-PV	1/8	6x12
	EM-KZB1B-04-12-PP	EM-KZB1B-04-12-PV	1/4	6x12
	EM-KZB1B-06-12-PP	EM-KZB1B-06-12-PV	3/8	6x12
	EM-KZB1B-08-12-PP	EM-KZB1B-08-12-PV	1/2	6x12
	EM-KZB1B-12-12-PP	EM-KZB1B-12-12-PV	3/4	6x12
	EM-KZB1B-02-14-PP	-	1/8	8x14
	EM-KZB1B-04-14-PP	EM-KZB1B-04-14-PV	1/4	8x14
	EM-KZB1B-06-14-PP	EM-KZB1B-06-14-PV	3/8	8x14
	EM-KZB1B-08-14-PP	EM-KZB1B-08-14-PV	1/2	8x14
	EM-KZB1B-12-14-PP	-	3/4	8x14
	EM-KZB1B-02-15-PP	EM-KZB1B-02-15-PV	1/8	9x15
	EM-KZB1B-04-15-PP	EM-KZB1B-04-15-PV	1/4	9x15
	EM-KZB1B-06-15-PP	EM-KZB1B-06-15-PV	3/8	9x15
	EM-KZB1B-08-15-PP	EM-KZB1B-08-15-PV	1/2	9x15
	EM-KZB1B-12-15-PP	EM-KZB1B-12-15-PV	3/4	9x15


description	code (polypropylene)	code (PVDF)	thread size [inch]	hose I.D. x O.D. [mm]
<b>Straight fitting with BSP female</b> 	-	EM-KWB1B-02-10-PV	1/8	4x10
	-	EM-KWB1B-04-10-PV	1/4	4x10
	EM-KWB1B-06-10-PP	EM-KWB1B-06-10-PV	3/8	4x10
	EM-KWB1B-08-10-PP	-	1/2	4x10
	EM-KWB1B-04-12-PP	EM-KWB1B-04-12-PV	1/4	6x12
	EM-KWB1B-06-12-PP	EM-KWB1B-06-12-PV	3/8	6x12
	EM-KWB1B-08-12-PP	EM-KWB1B-08-12-PV	1/2	6x12
	EM-KWB1B-12-12-PP	-	3/4	6x12
	EM-KWB1B-04-14-PP	-	1/4	8x14
	EM-KWB1B-06-14-PP	EM-KWB1B-06-14-PV	3/8	8x14
	EM-KWB1B-08-14-PP	EM-KWB1B-08-14-PV	1/2	8x14
	EM-KWB1B-12-14-PP	-	3/4	8x14
	-	EM-KWB1B-02-15-PV	1/8	9x15
	-	EM-KWB1B-04-15-PV	1/4	9x15
	EM-KWB1B-06-15-PP	EM-KWB1B-06-15-PV	3/8	9x15
	EM-KWB1B-08-15-PP	EM-KWB1B-08-15-PV	1/2	9x15
	EM-KWB1B-12-15-PP	EM-KWB1B-12-15-PV	3/4	9x15

## INDUSTRIAL FITTINGS - fittings, connectors

### Fittings and hose connectors - EM type (3C series) PN 6 bar


Plastic Tri-Clamp fittings made of polypropylene, PVDF and PTFE. Depending on the medium, seals can be made of EPDM, FPM, PTFE or FFKM. Sizes and diameters compliant with DIN 32676, ISO 2852 and BS 4825 standard. Available with BSP and NPT thread.


picture	code	plate diameter [mm]	thread size [inch]	material
	EM-3C100MG25116-PF	25	1/16	PFA
	EM-3C100MG2518-PV	25	1/8	PVDF
	EM-3C100MG2514-PF	25	1/4	PFA
	EM-3C100MG2514-PP	25	1/4	PP
	EM-3C100MG2514-PN	25	1/4	PP-NATURE
	EM-3C100MG2514-PT	25	1/4	PTFE
	EM-3C100MG2514-PV	25	1/4	PVDF
	EM-3C100MG3414-PT	34	1/4	PTFE
	EM-3C100MG3414-PV	34	1/4	PVDF
	EM-3C100MG3438-PT	34	3/8	PTFE
	EM-3C100MG3438-PV	34	3/8	PVDF
	EM-3C100MG3412-PT	34	1/2	PTFE
	EM-3C100MG3412-PV	34	1/2	PVDF
	EM-3C100MG5014-PV	50.5	1/4	PVDF
	EM-3C100MG5012-PP	50.5	1/2	PP
	EM-3C100MG5012-PT	50.5	1/2	PTFE
	EM-3C100MG5012-PV	50.5	1/2	PVDF
	EM-3C100MG5034-PP	50.5	3/4	PP
	EM-3C100MG5034-PT	50.5	3/4	PTFE
	EM-3C100MG5034-PV	50.5	3/4	PVDF
	EM-3C100MG50100-PP	50.5	1	PP
	EM-3C100MG50100-PT	50.5	1	PTFE
	EM-3C100MG50100-PV	50.5	1	PVDF
	EM-3C100MG50114-PP	50.5	1.1/4	PP

picture	code	plate diameter [mm]	thread size [inch]	material
	EM-3C100FG2518-PN	25	1/8	PP-NATURE
	EM-3C100FG5018-PP	50.5	1/8	PP
	EM-3C100FG5014-PV	50.5	1/4	PVDF
	EM-3C100FG5012-PV	50.5	1/2	PVDF
	EM-3C100FG5034-PP	50.5	3/4	PP
	EM-3C100FG50100-PV	50.5	1	PVDF

## INDUSTRIAL FITTINGS - fittings, connectors

### Fittings and hose connectors - EM type (3C series) PN 6 bar

picture	code	plate diameter [mm]	hose diameter [mm]	material
<p>Self-assembly fitting</p> 	EM-3C100TA2540-PP	25	4x6	PP
	EM-3C100TA2540-PV	25	4x6	PVDF
	EM-3C100TA2543-PP	25	6x8	PP
	EM-3C100TA2543-PV	25	6x8	PVDF
	EM-3C100TA2545-PP	25	8x10	PP
	EM-3C100TA2545-PV	25	8x10	PVDF
	EM-3C100TA2548-PV	25	10x12	PVDF
	EM-3C100TA3443-PP	34	6x8	PP
	EM-3C100TA3443-PN	34	6x8	PP-NATUR
	EM-3C100TA3443-PV	34	6x8	PVDF
	EM-3C100TA3445-PP	34	8x10	PP
	EM-3C100TA3445-PV	34	8x10	PVDF
	EM-3C100TA3448-PP	34	10x12	PP

picture	code	plate diameter [mm]	hose diameter [mm]	material
<p>Fitting with hose tail</p> 	EM-3C100TT3440-PV	34	6	PVDF
	EM-3C100TT3448-PV	34	10	PVDF
	EM-3C100TT3451-PV	34	12	PVDF
	EM-3C100TT5048-PV	50.5	10	PVDF
	EM-3C100TT5051-PV	50.5	12	PVDF

# INDUSTRIAL FITTINGS - fittings, connectors

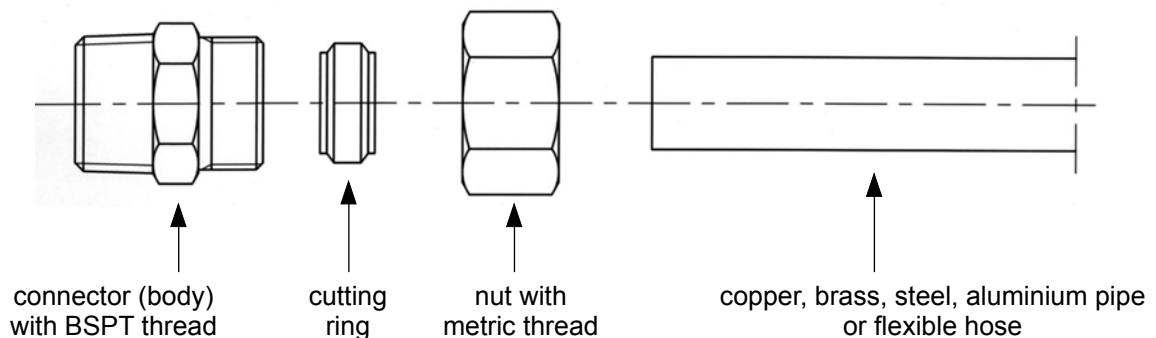
## Brass connectors - AI 13000 type

General purpose connectors with cutting ring of a symmetric shape, designed to connect copper, brass, steel, aluminium pipes, etc. as well as plastic pipes and hoses (e.g. polyamide) in accordance to EN 1254-2 standard. Body, nut and ring made of brass. Pipe O.D., capable of being connected, from 4 to 22 mm. Sealing of the connection is obtained by cutting ring biting into the pipe and simultaneously pressing the pipe (with cutting ring) against the socket with the use of nut. Array of connectors designed to connect pipes (straight connectors, elbows, tees, crosses), stud couplings to be screwed into the body (straight, elbow, tee, BANJO), adapters, cutting rings, nuts and others. General purpose brass connectors designed for water, air, oil, fuels, etc. especially applied in installations built of brass pipes.

**Maximum working pressure for connection of brass pipes with wall thickness of 1 mm  
(pre-set safety factor 4:1, temperature +20°C)**

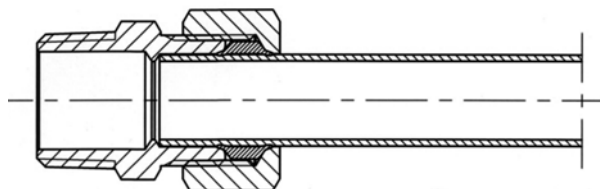
pipe O.D. [mm]	4	6	8	10	12	14	16	18	22
working press. [bar]	150	150	135	95	75	100	95	70	70

Note: for pipes and hoses made of different materials, tests in real working conditions are recommended, taking the influence of working temperature into consideration.



### CONNECTOR AFTER ASSEMBLY

Attention: for flexible hoses, reinforcing ferrule is recommended. For bended pipes, straight piece of the pipe (min. 2x height of the nut) should be retained - measured from nut after assembly.



### ASSEMBLY OF CONNECTOR ON PIPE

1. Pipe must be cut off at the right angle.
2. Put mineral oil on outside thread, ring and inside thread.
3. Insert the pipe into the connector, put ring and nut, screw the nut by hand.
4. Be sure the pipe reached the bottom of connector.
5. Screw the nut by 1 and 1/4 turn.
6. Unscrew the nut, take the pipe out, check the position of cutting ring.
7. Screw the connection with a spanner by additional 1/4 turn.

## INDUSTRIAL FITTINGS - fittings, connectors

### Brass connectors - AI 13000 type

Straight connector



**13460**

code	pipe O.D. [mm]	spanner size [mm]
AI-13460-04	4	10
AI-13460-06	6	11
AI-13460-08	8	13
AI-13460-10	10	16
AI-13460-12	12	18
AI-13460-14	14	21
AI-13460-15	15	21
AI-13460-16	16	22
AI-13460-18	18	26
AI-13460-22	22	30

90° elbow connector



**13260**

code	pipe O.D. [mm]	spanner size [mm]
AI-13260-04	4	8
AI-13260-06	6	9
AI-13260-08	8	11
AI-13260-10	10	13
AI-13260-12	12	14
AI-13260-14	14	17
AI-13260-15	15	17
AI-13260-16	16	17
AI-13260-18	18	20
AI-13260-22	22	27

Tee connector



**13200**

code	pipe O.D. [mm]	spanner size [mm]
AI-13200-04	4	8
AI-13200-06	6	9
AI-13200-08	8	12
AI-13200-10	10	13
AI-13200-12	12	14
AI-13200-14	14	18
AI-13200-15	15	18
AI-13200-16	16	17
AI-13200-18	18	20
AI-13200-22	22	27

Cross connector





**13510**


code	pipe O.D. [mm]	spanner size [mm]
AI-13510-04	4	8
AI-13510-06	6	9
AI-13510-08	8	11
AI-13510-10	10	13
AI-13510-12	12	17
AI-13510-14	14	17


# INDUSTRIAL FITTINGS - fittings, connectors

## Brass connectors - AI 13000 type

Straight connector BSPT male			
			
<b>13480</b>			
code	pipe O.D. [mm]	thread size [inch]	spanner size [mm]
AI-13480-04-02	4	1/8	11
AI-13480-04-04	4	1/4	14
AI-13480-06-02	6	1/8	11
AI-13480-06-04	6	1/4	14
AI-13480-06-06	6	3/8	17
AI-13480-08-02	8	1/8	13
AI-13480-08-04	8	1/4	14
AI-13480-08-06	8	3/8	17
AI-13480-10-04	10	1/4	16
AI-13480-10-06	10	3/8	17
AI-13480-10-08	10	1/2	21
AI-13480-12-04	12	1/4	18
AI-13480-12-06	12	3/8	18
AI-13480-12-08	12	1/2	21
AI-13480-14-06	14	3/8	20
AI-13480-14-08	14	1/2	21
AI-13480-15-08	15	1/2	21
AI-13480-16-08	16	1/2	22
AI-13480-16-12	16	3/4	27
AI-13480-18-08	18	1/2	24
AI-13480-18-12	18	3/4	27
AI-13480-22-08	22	1/2	30
AI-13480-22-12	22	3/4	30

Straight connector BSP female			
			
<b>13500</b>			
code	pipe O.D. [mm]	thread size [inch]	spanner size [mm]
AI-13500-04-02	4	1/8	14
AI-13500-04-04	4	1/4	17
AI-13500-06-02	6	1/8	14
AI-13500-06-04	6	1/4	17
AI-13500-08-02	8	1/8	14
AI-13500-08-04	8	1/4	17
AI-13500-08-06	8	3/8	20
AI-13500-10-04	10	1/4	17
AI-13500-10-06	10	3/8	20
AI-13500-10-08	10	1/2	24
AI-13500-12-04	12	1/4	18
AI-13500-12-06	12	3/8	20
AI-13500-12-08	12	1/2	24
AI-13500-14-06	14	3/8	20
AI-13500-14-08	14	1/2	24
AI-13500-15-08	15	1/2	24
AI-13500-16-08	16	1/2	24
AI-13500-16-12	16	3/4	30
AI-13500-18-08	18	1/2	24
AI-13500-18-12	18	3/4	30
AI-13500-22-12	22	3/4	30

Straight connector BSP male			
			
<b>13485</b>			
code	pipe O.D. [mm]	thread size [inch]	spanner size [mm]
AI-13485-04-02	4	1/8	13
AI-13485-06-02	6	1/8	13
AI-13485-06-04	6	1/4	17
AI-13485-08-02	8	1/8	13
AI-13485-08-04	8	1/4	17
AI-13485-08-06	8	3/8	22
AI-13485-10-04	10	1/4	17
AI-13485-10-06	10	3/8	22
AI-13485-14-06	14	3/8	22
AI-13485-14-08	14	1/2	27
AI-13485-22-12	22	3/4	32
AI-13485-22-16	22	1	40

Straight pipe connector BSP male			
			
<b>13530</b>			
code	pipe O.D. [mm]	thread size [inch]	spanner size [mm]
AI-13530-06-02	6	1/8"	13
AI-13530-06-04	6	1/4"	17
AI-13530-08-02	8	1/8"	13
AI-13530-08-04	8	1/4"	17
AI-13530-08-06	8	3/8"	22
AI-13530-10-04	10	1/4"	17
AI-13530-10-06	10	3/8"	22
AI-13530-14-06	14	3/8"	22
AI-13530-14-08	14	1/2"	27

# INDUSTRIAL FITTINGS - fittings, connectors

## Brass connectors - AI 13000 type

Tee connector (T type) BSPT male



**13220**

code	pipe O.D. [mm]	thread size [inch]	spanner size [mm]
AI-13220-04-02	4	1/8	8
AI-13220-06-02	6	1/8	9
AI-13220-06-04	6	1/4	9
AI-13220-08-02	8	1/8	12
AI-13220-08-04	8	1/4	12
AI-13220-08-06	8	3/8	13
AI-13220-10-04	10	1/4	13
AI-13220-10-06	10	3/8	13
AI-13220-10-08	10	1/2	14
AI-13220-12-04	12	1/4	14
AI-13220-12-06	12	3/8	14
AI-13220-12-08	12	1/2	14
AI-13220-14-06	14	3/8	16
AI-13220-14-08	14	1/2	18
AI-13220-15-08	15	1/2	18
AI-13220-16-08	16	1/2	17
AI-13220-18-08	18	1/2	20
AI-13220-18-12	18	3/4	20
AI-13220-22-12	22	3/4	27

Tee connector (T type) BSP female



**13240**

code	pipe O.D. [mm]	thread size [inch]	spanner size [mm]
AI-13240-04-02	4	1/8	8
AI-13240-06-02	6	1/8	9
AI-13240-06-04	6	1/4	13
AI-13240-08-02	8	1/8	12
AI-13240-08-04	8	1/4	13
AI-13240-10-04	10	1/4	13
AI-13240-10-06	10	3/8	14
AI-13240-10-08	10	1/2	15
AI-13240-12-04	12	1/4	14
AI-13240-12-06	12	3/8	14
AI-13240-12-08	12	1/2	15
AI-13240-14-08	14	1/2	18
AI-13240-15-08	15	1/2	18
AI-13240-16-08	16	1/2	17
AI-13240-18-08	18	1/2	20
AI-13240-18-12	18	3/4	20

Tee connector (L type) BSPT male



**13230**

code	pipe O.D. [mm]	thread size [inch]	spanner size [mm]
AI-13230-04-02	4	1/8	8
AI-13230-06-02	6	1/8	9
AI-13230-06-04	6	1/4	9
AI-13230-08-02	8	1/8	12
AI-13230-08-04	8	1/4	12
AI-13230-08-06	8	3/8	13
AI-13230-10-04	10	1/4	13
AI-13230-10-06	10	3/8	13
AI-13230-12-06	12	3/8	14
AI-13230-12-08	12	1/2	15
AI-13230-14-08	14	1/2	18

BANJO connector BSP male



**13550**

code	pipe O.D. [mm]	thread size [inch]	spanner size [mm]
AI-13550-04-02	4	1/8	14
AI-13550-06-02	6	1/8	14
AI-13550-06-04	6	1/4	17
AI-13550-08-02	8	1/8	14
AI-13550-08-04	8	1/4	17
AI-13550-08-06	8	3/8	19
AI-13550-10-04	10	1/4	17
AI-13550-10-06	10	3/8	19
AI-13550-14-04	14	1/4	17
AI-13550-14-06	14	3/8	22
AI-13550-14-08	14	1/2	24
AI-13550-22-12	22	3/4	32



# INDUSTRIAL FITTINGS - fittings, connectors

## Brass connectors - Al 13000 type

90° elbow connector BSPT male



**13280**

code	pipe O.D. [mm]	thread size [inch]	spanner size [mm]
Al-13280-04-02	4	1/8	8
Al-13280-06-02	6	1/8	9
Al-13280-06-04	6	1/4	9
Al-13280-08-02	8	1/8	11
Al-13280-08-04	8	1/4	11
Al-13280-08-06	8	3/8	13
Al-13280-10-04	10	1/4	13
Al-13280-10-06	10	3/8	13
Al-13280-10-08	10	1/2	14
Al-13280-12-04	12	1/4	14
Al-13280-12-06	12	3/8	14
Al-13280-12-08	12	1/2	14
Al-13280-14-06	14	3/8	17
Al-13280-14-08	14	1/2	17
Al-13280-15-08	15	1/2	17
Al-13280-16-08	16	1/2	17
Al-13280-18-08	18	1/2	20
Al-13280-18-12	18	3/4	20
Al-13280-22-12	22	3/4	27

90° elbow connector BSP female



**13290**

code	pipe O.D. [mm]	thread size [inch]	spanner size [mm]
Al-13290-04-02	4	1/8	8
Al-13290-06-02	6	1/8	9
Al-13290-06-04	6	1/4	11
Al-13290-08-02	8	1/8	11
Al-13290-08-04	8	1/4	13
Al-13290-08-06	8	3/8	14
Al-13290-10-04	10	1/4	13
Al-13290-10-06	10	3/8	14
Al-13290-10-08	10	1/2	15
Al-13290-12-04	12	1/4	14
Al-13290-12-06	12	3/8	14
Al-13290-12-08	12	1/2	15
Al-13290-14-08	14	1/2	18
Al-13290-15-08	15	1/2	18
Al-13290-16-08	16	1/2	18
Al-13290-18-08	18	1/2	20
Al-13290-18-12	18	3/4	20

Straight pipe connector with hose tail



**13540**

code	pipe O.D. [mm]	hose I.D. [mm]
Al-13540-06-07	6	7
Al-13540-08-07	8	7
Al-13540-08-10	8	10
Al-13540-10-07	10	7
Al-13540-10-10	10	10
Al-13540-12-10	12	10
Al-13540-12-13	12	13
Al-13540-14-13	14	13

Nut





**13680**


code	pipe O.D. [mm]	thread size [mm]	spanner size [mm]
Al-13680-04	4	M8x1	10
Al-13680-06	6	M10x1	13
Al-13680-08	8	M12x1	14
Al-13680-10	10	M16x1.5	19
Al-13680-12	12	M18x1.5	22
Al-13680-14	14	M20x1.5	24
Al-13680-15	15	M20x1.5	24
Al-13680-16	16	M22x1.5	27
Al-13680-18	18	M24x1.5	30
Al-13680-22	22	M30x1.5	36


# INDUSTRIAL FITTINGS - fittings, connectors

## Brass connectors - AI 13000 type

Ring		
 <b>13740</b>		
code	pipe O.D. [mm]	height [mm]
AI-13740-04	4	6
AI-13740-06	6	6.5
AI-13740-08	8	7
AI-13740-10	10	8
AI-13740-12	12	8.5
AI-13740-14	14	8.5
AI-13740-15	15	8.5
AI-13740-16	16	9
AI-13740-18	18	9.5
AI-13740-22	22	10

Blank cap		
 <b>13780</b>		
code	pipe O.D. [mm]	length [mm]
AI-13780-04	4	10
AI-13780-06	6	10.5
AI-13780-08	8	10.5
AI-13780-10	10	11.5
AI-13780-12	12	12
AI-13780-14	14	14
AI-13780-15	15	14
AI-13780-16	16	14
AI-13780-18	18	16
AI-13780-22	22	15

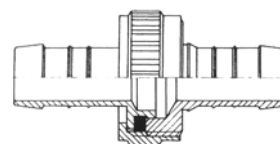
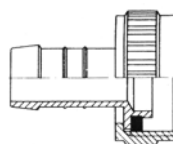
Reinforcing ferrule			
 <b>10770</b>			
code	pipe O.D. x I.D. [mm]	O.D. [mm]	I.D. [mm]
AI-10770-04X2,7	4 x 2.7	2.7	1.5
AI-10770-06X04	6 x 4	4	3
AI-10770-08X06	8 x 6	6	5
AI-10770-10X08	10 x 8	8	7
AI-10770-12X09	12 x 9	9	8
AI-10770-12X10	12 x 10	10	9
AI-10770-14X12	14 x 12	12	11
AI-10770-15X12,5	15 x 12.5	12.5	11.5
AI-10770-16X13	16 x 13	13	12
AI-10770-18X15	18 x 15	15	14
AI-10770-18X16	18 x 16	16	15
AI-10770-22X18	22 x 18	18	16.5

Reduction		
 <b>13600</b>		
code	pipe O.D. [mm]	pipe O.D. [mm]
AI-13600-04-06	4	6
AI-13600-06-08	6	8
AI-13600-08-10	8	10
AI-13600-10-12	10	12
AI-13600-12-14	12	14

# INDUSTRIAL FITTINGS - fittings, connectors

## NiTO fittings and hose connectors

**Material:** Brass  
**Working press.:** 25 bar  
**Working temp.:** Up to +80°C



Fitting BSP male with hose tail



code	thread size [inch]	hose I.D. [inch]
NT-27110A4	1/2	1/2
NT-27210A4	3/4	3/4
NT-27240A4	3/4	1
NT-27790A4	3/4	1/2
NT-27410A4	1	1
NT-27710A4	1.1/4	1.1/4
NT-27810A4	1.1/2	1.1/2
NT-27910A4	2	2

Fitting BSP female with hose tail



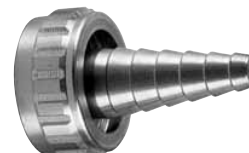
code	thread size	hose I.D. [inch]
NT-27150A4	1/2"	1/2
NT-2715AA4	M22x1	3/4
NT-2715BA4	1/2"	1/4
NT-2721MA4	1/2"	5/8
NT-2722MA4	3/4"	5/8
NT-27250A4	3/4"	3/4
NT-27350A4	3/4"	1/2

Fitting BSP female with hose tail



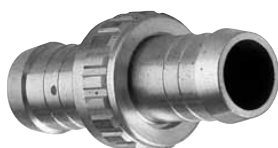
code	thread size [inch]	hose I.D. [inch]
NT-27450A4	1	1
NT-27550A4	1	1/2
NT-27650A4	1	3/4
NT-27750A4	1.1/4	1.1/4
NT-27850A4	1.1/2	1.1/2
NT-27950A4	2	2

General purpose fitting BSP female with hose tail



code	thread size [inch]	hose I.D. [mm]
NT-27L42A4	1/2	15 ÷ 6.3

Screw-to-connect hose connector



code	thread size [inch]	hose I.D. [inch]
NT-27160A4	1/2	1/2
NT-27260A4	3/4	3/4
NT-27360A4	1/2	3/4

Seal



code	thread size [inch]	dimensions [mm]
NT-1-290A8	1/2	18x12.4x2
NT-1-300A8	3/4	23x16.7x2
NT-1-320A8	1	29x23x2.5
NT-1-900A8	1.1/4	38x29x2
NT-1-910A8	1.1/2	44x34x2
NT-1-920A8	2	55x45x2

# INDUSTRIAL FITTINGS - fittings, connectors

## NiTO fittings and hose connectors

Fitting BSP male with hose tail



code	thread size [inch]	hose I.D.
NT-2760AA4	1/8	1/8" (3.5 mm)
NT-2764AA4	1/8	1/4" (6.5 mm)
NT-2766AA4	1/8	3/8" (10.2 mm)
NT-2760BA4	1/4	1/4" (6.5 mm)
NT-2768BA4	1/4	5/16" (8.5 mm)
NT-2764BA4	1/4	3/8" (10.2 mm)
NT-2766BA4	1/4	1/2" (13.5 mm)
NT-2764CA4	3/8	1/4" (6.5 mm)
NT-2760CA4	3/8	3/8" (10.2 mm)
NT-2766CA4	3/8	1/2" (13.5 mm)
NT-2764DA4	1/2	1/4" (6.5 mm)
NT-2768DA4	1/2	5/16" (8.5 mm)
NT-2766DA4	1/2	3/8" (10.2 mm)
NT-2760DA4	1/2	1/2" (13.5 mm)
NT-2764NA4	1/2	5/8" (16.5 mm)
NT-2766NA4	1/2	3/4" (19.5 mm)
NT-2766EA4	3/4	1/2" (13.5 mm)
NT-2760EA4	3/4	3/4" (19.5 mm)
NT-2760FA4	1	1" (26 mm)
NT-2760GA4	1.1/4	1.1/4" (32 mm)
NT-2760HA4	1.1/2	1.1/2" (39 mm)
NT-2760IA4	2	2" (51 mm)

Fitting BSPT male with hose tail



code	thread size [inch]	hose I.D.
NT-2660AA4	1/8	1/8" (3.5 mm)
NT-2664AA4	1/8	1/4" (6.5 mm)
NT-2666AA4	1/8	3/8" (10.2 mm)
NT-2660BA4	1/4	1/4" (6.5 mm)
NT-2668BA4	1/4	5/16" (8.5 mm)
NT-2664BA4	1/4	3/8" (10.2 mm)
NT-2666BA4	1/4	1/2" (13.5 mm)
NT-2664CA4	3/8	1/4" (6.5 mm)
NT-2660CA4	3/8	3/8" (10.2 mm)
NT-2666CA4	3/8	1/2" (13.5 mm)
NT-2664EA4	3/8	3/4" (19.5 mm)
NT-2664DA4	1/2	1/4" (6.5 mm)
NT-2668DA4	1/2	5/16" (8.5 mm)
NT-2666DA4	1/2	3/8" (10.2 mm)
NT-2660DA4	1/2	1/2" (13.5 mm)
NT-2664NA4	1/2	5/8" (16.5 mm)
NT-2666NA4	1/2	3/4" (19.5 mm)
NT-2666EA4	3/4	1/2" (13.5 mm)
NT-2660EA4	3/4	3/4" (19.5 mm)
NT-2660FA4	1	1" (26 mm)

Hose connector



code	hose I.D. [inch]
NT-15020A4	1/2
NT-15030A4	3/4
NT-15040A4	1


Clamp with 3/4" male thread for valve without thread





code	thread size [inch]	clamping range [mm]
NT-57078A5	3/4	14 ÷ 20
NT-57079A5	3/4	22 ÷ 30

# INDUSTRIAL FITTINGS - fittings, connectors

## CN type fittings

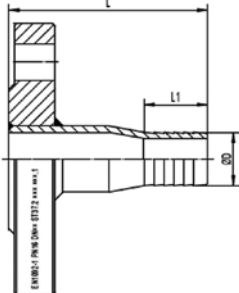
picture	code (galvanized steel)	code (AISI 304)	hose I.D. [mm]	hose I.D. [inch]
<p>CND type hose connector</p> 	AC-CND-025	AC-CND-025-SS	6	1/4
	AC-CND-038	AC-CND-038-SS	10	3/8
	AC-CND-050	AC-CND-050-SS	13	1/2
	AC-CND-058	AC-CND-058-SS	16	5/8
	AC-CND-075	AC-CND-075-SS	19	3/4
	AC-CND-100	AC-CND-100-SS	25	1
	AC-CND-125	AC-CND-125-SS	32	1.1/4
	AC-CND-138	AC-CND-138-SS	35	1.3/8
	AC-CND-150	AC-CND-150-SS	40	1.1/2
	AC-CND-200	AC-CND-200-SS	50	2
	AC-CND-250	AC-CND-250-SS	65	2.1/2
	AC-CND-300	AC-CND-300-SS	75	3
	AC-CND-400	AC-CND-400-SS	100	4
	AC-CND-500	AC-CND-500-SS	125	5
	AC-CND-600	AC-CND-600-SS	150	6
	AC-CND-800	AC-CND-800-SS	200	8
	AC-CND-1000	AC-CND-1000-SS	250	10

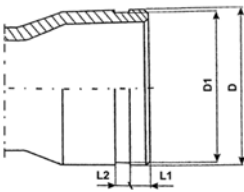
picture	code (galvanized steel)	code (AISI 304)	code (AISI 316)	hose I.D. [mm]	thread size [inch]
<p>CNP type fitting with BSPT male thread</p> 	AC-CNP-050	AC-CNP-050-SS	AC-CNP-050-SS316	13	1/2
	AC-CNP-075	AC-CNP-075-SS	AC-CNP-075-SS316	19	3/4
	AC-CNP-100	AC-CNP-100-SS	AC-CNP-100-SS316	25	1
	AC-CNP-125	AC-CNP-125-SS	AC-CNP-125-SS316	32	1.1/4
	AC-CNP-150	AC-CNP-150-SS	AC-CNP-150-SS316	40	1.1/2
	AC-CNP-200	AC-CNP-200-SS	AC-CNP-200-SS316	50	2
	AC-CNP-250	AC-CNP-250-SS	AC-CNP-250-SS316	65	2.1/2
	AC-CNP-300	AC-CNP-300-SS	AC-CNP-300-SS316	75	3
	AC-CNP-400	AC-CNP-400-SS	AC-CNP-400-SS316	100	4
	AC-CNP-500	AC-CNP-500-SS	AC-CNP-500-SS316	125	5
	AC-CNP-600	AC-CNP-600-SS	AC-CNP-600-SS316	150	6
	AC-CNP-800	AC-CNP-800-SS	AC-CNP-800-SS316	200	8


picture	code (carbon steel)	code (AISI 304)	hose I.D. [mm]	hose I.D. [inch]
<p>CNW type fitting, butt weld</p> 	AC-CNW-050	AC-CNW-050-SS	13	1/2
	AC-CNW-075	AC-CNW-075-SS	19	3/4
	AC-CNW-100	AC-CNW-100-SS	25	1
	AC-CNW-125	AC-CNW-125-SS	32	1.1/4
	AC-CNW-150	AC-CNW-150-SS	40	1.1/2
	AC-CNW-200	AC-CNW-200-SS	50	2
	AC-CNW-250	AC-CNW-250-SS	65	2.1/2
	AC-CNW-300	AC-CNW-300-SS	75	3
	AC-CNW-400	AC-CNW-400-SS	100	4
	AC-CNW-500	AC-CNW-500-SS	125	5
	AC-CNW-600	AC-CNW-600-SS	150	6
	AC-CNW-800	AC-CNW-800-SS	200	8

# INDUSTRIAL FITTINGS - fittings, connectors

## CN type fittings


picture	code (carbon steel)	code (AISI 304)	DN [mm]	D [mm]	L [mm]	L1 [mm]
<p>Flange fitting PN16, CNWF type</p> 	AC-CNWF-015	AC-CNWF-015SS	15	13.5	74.5	30
	AC-CNWF-020	AC-CNWF-020SS	20	20	76	33
	AC-CNWF-025	AC-CNWF-025SS	25	26	86	36
	AC-CNWF-032	AC-CNWF-032SS	32	32	91	36
	AC-CNWF-040	AC-CNWF-040SS	40	39	99	42.5
	AC-CNWF-050	AC-CNWF-050SS	50	51.5	118	51.5
	AC-CNWF-065	AC-CNWF-065SS	65	64	143	62
	AC-CNWF-080	AC-CNWF-080SS	80	77	150	68
	AC-CNWF-100	AC-CNWF-100SS	100	102.5	182.5	94.5


picture	code (carbon steel)	hose I.D. [mm]	hose I.D. [inch]	D [mm]	D1 [mm]	L1 [mm]	L2 [mm]
<p>CNG type fitting with groove</p> 	AC-CNG-075	19	3/4	26.9	24	16	7.95
	AC-CNG-100	25	1	33.7	31	16	7.95
	AC-CNG-125	32	1.1/4	42.4	40	16	7.95
	AC-CNG-150	40	1.1/2	48.3	45	16	7.95
	AC-CNG-200	50	2	60.3	57	16	7.95
	AC-CNG-250	65	2.1/2	73	69	16	7.95
	AC-CNG-300	75	3	88.9	85	16	7.95
	AC-CNG-400	100	4	114.3	110	16	9.53
	AC-CNG-500	125	5	141.3	137	16	9.53
	AC-CNG-600	150	6	168.3	164	16	9.53
	AC-CNG-800	200	8	219.1	215	19	11.13

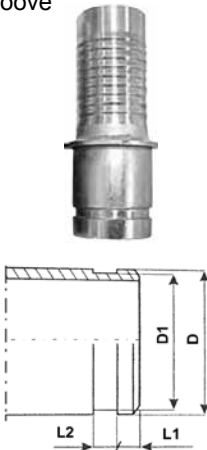
picture	code (AISI 304)	code (AISI 316)	thread size [inch]	length [mm]
<p>CNS type fitting, butt weld, with BSPT male thread</p> 	AC-CNS-025-051-SS	AC-CNS-025-051-SS316	1/4	51
	AC-CNS-038-038-SS	AC-CNS-038-038-SS316	3/8	38
	AC-CNS-038-051-SS	AC-CNS-038-051-SS316	3/8	51
	AC-CNS-050-051-SS	AC-CNS-050-051-SS316	1/2	51
	AC-CNS-075-051-SS	AC-CNS-075-051-SS316	3/4	51
	AC-CNS-075-076-SS	AC-CNS-075-076-SS316	3/4	76
	AC-CNS-100-051-SS	AC-CNS-100-051-SS316	1	51
	AC-CNS-100-076-SS	AC-CNS-100-076-SS316	1	76
	AC-CNS-150-051-SS	AC-CNS-150-051-SS316	1.1/2	51
	AC-CNS-150-064-SS	AC-CNS-150-064-SS316	1.1/2	64
	AC-CNS-150-076-SS	AC-CNS-150-076-SS316	1.1/2	76
	AC-CNS-200-051-SS	AC-CNS-200-051-SS316	2	51
	AC-CNS-200-064-SS	AC-CNS-200-064-SS316	2	64
	AC-CNS-200-076-SS	AC-CNS-200-076-SS316	2	76
	AC-CNS-200-102-SS	AC-CNS-200-102-SS316	2	102
	AC-CNS-200-152-SS	AC-CNS-200-152-SS316	2	152
	AC-CNS-300-076-SS	AC-CNS-300-076-SS316	3	76
	AC-CNS-300-102-SS	AC-CNS-300-102-SS316	3	102
	AC-CNS-400-102-SS	AC-CNS-400-102-SS316	4	102

# INDUSTRIAL FITTINGS - fittings, connectors

## CN type fittings


picture	code (galvanized steel)	code (AISI 304)	code (AISI 316)	hose I.D. [mm]	thread size [inch]
<p>CNPH type fitting (HEAVY DUTY) with BSPT male thread</p> 	AC-CNPH-150	AC-CNPH-150-SS	AC-CNPH-150-SS316	40	1.1/2
	AC-CNPH-200	AC-CNPH-200-SS	AC-CNPH-200-SS316	50	2
	AC-CNPH-250	AC-CNPH-250-SS	AC-CNPH-250-SS316	65	2.1/2
	AC-CNPH-300	AC-CNPH-300-SS	AC-CNPH-300-SS316	75	3
	AC-CNPH-400	AC-CNPH-400-SS	AC-CNPH-400-SS316	100	4
	AC-CNPH-500	AC-CNPH-500-SS	AC-CNPH-500-SS316	125	5
	AC-CNPH-600	AC-CNPH-600-SS	AC-CNPH-600-SS316	150	6
	AC-CNPH-800	-	-	200	8


picture	code (carbon steel)	code (AISI 304)	hose I.D. [mm]	hose I.D. [inch]
<p>CNWH (HEAVY DUTY) type fitting, butt weld</p> 	AC-CNWH-200	AC-CNWH-200-SS	50	2
	AC-CNWH-250	AC-CNWH-250-SS	65	2.1/2
	AC-CNWH-300	AC-CNWH-300-SS	75	3
	AC-CNWH-400	AC-CNWH-400-SS	100	4
	AC-CNWH-500	AC-CNWH-500-SS	125	5
	AC-CNWH-600	AC-CNWH-600-SS	150	6
	AC-CNWH-800	AC-CNWH-800-SS	200	8

picture	code (carbon steel)	hose I.D. [mm]	hose I.D. [inch]	D [mm]	D1 [mm]	L1 [mm]	L2 [mm]
<p>CNGH type fitting (HEAVY DUTY) with groove</p> 	AC-CNGH-200	50	2	60.3	57	16	7.95
	AC-CNGH-250	65	2.1/2	73	69	16	7.95
	AC-CNGH-300	75	3	88.9	85	16	7.95
	AC-CNGH-400	100	4	114.3	110	16	9.53
	AC-CNGH-500	125	5	141.3	137	16	9.53
	AC-CNGH-600	150	6	168.3	164	16	9.53
	AC-CNGH-800	200	8	219.1	215	19	11.13

# INDUSTRIAL FITTINGS - fittings, connectors

## CN type fittings


picture	code (galvanized steel)	hose I.D. [inch]	hose I.D. [mm]	range of hose I.D. [mm]	ferrule I.D. [mm]	ferrule length [mm]
<b>CNFH (HEAVY DUTY) type crimp ferrule for hoses</b>  	AC-CNFH-200A	2	51	63.5 ÷ 67	69.9	88.9
	AC-CNFH-200B	2	51	67 ÷ 73	76.2	88.9
	AC-CNFH-200C	2	51	73 ÷ 79	82.5	88.9
	AC-CNFH-250A	2.1/2	63	76 ÷ 79	82.5	108
	AC-CNFH-250B	2.1/2	63	79 ÷ 92	95.2	108
	AC-CNFH-300A	3	76	89 ÷ 92	95.2	127
	AC-CNFH-300B	3	76	92 ÷ 98	101.6	127
	AC-CNFH-300C	3	76	98 ÷ 102	104.8	127
	AC-CNFH-300D	3	76	102 ÷ 105	108	127
	AC-CNFH-300E	3	76	105 ÷ 108	114.3	127
	AC-CNFH-400A	4	102	114 ÷ 121	123.8	139.7
	AC-CNFH-400B	4	102	121 ÷ 125	128.6	139.7
	AC-CNFH-400C	4	102	125 ÷ 128	131.8	139.7
	AC-CNFH-400D	4	102	128 ÷ 132	134.9	139.7
	AC-CNFH-400E	4	102	133 ÷ 136	139.7	139.7
	AC-CNFH-400F	4	102	133 ÷ 140	142.9	139.7
	AC-CNFH-500A	5	127	146 ÷ 152	155.6	174.6
	AC-CNFH-500B	5	127	152 ÷ 162	165.1	178.3
	AC-CNFH-600A	6	152	171 ÷ 181	184.1	190.5
	AC-CNFH-600B	6	152	181 ÷ 187	190.5	190.5
	AC-CNFH-600C	6	152	187 ÷ 192	195.3	190.5
	AC-CNFH-600D	6	152	194 ÷ 203	206.4	190.5
	AC-CNFH-800A	8	204	229 ÷ 238	241.3	215.9
	AC-CNFH-800B	8	204	240 ÷ 257	260.3	215.9


picture	code (galvanized steel)	hose I.D. [inch]	hose I.D. [mm]	range of hose I.D. [mm]	ferrule I.D. [mm]	ferrule length [mm]
<b>CNFL type crimp ferrule for hoses</b>  	AC-CNFL-150-1	1.1/2	38	49 ÷ 51	53.8	74
	AC-CNFL-150-2	1.1/2	38	51 ÷ 54	56.9	74
	AC-CNFL-150-3	1.1/2	38	54 ÷ 57	60	74
	AC-CNFL-200-1	2	51	65 ÷ 67	70	90
	AC-CNFL-200-2	2	51	67 ÷ 70	73	90
	AC-CNFL-200-3	2	51	70 ÷ 73	76.2	90
	AC-CNFL-250-1	2.1/2	63	78 ÷ 82.5	82.3	89
	AC-CNFL-250-2	2.1/2	63	80 ÷ 82.5	85.1	89
	AC-CNFL-300-1	3	76	90.5 ÷ 92	94.5	117
	AC-CNFL-300-2	3	76	92.5 ÷ 95	98	117
	AC-CNFL-300-3	3	76	95.5 ÷ 98.5	100	117
	AC-CNFL-400-1	4	102	117.5 ÷ 119	124	135
	AC-CNFL-400-2	4	102	119.5 ÷ 122	128	135
	AC-CNFL-400-3	4	102	122.5 ÷ 125.5	130	135





# INDUSTRIAL FITTINGS - fittings, connectors

## Suction strainers

picture	code	thread size [inch]	O.D. [mm]	height [mm]	description
	PM-RH20A	1.1/2	121	87	Cylindrical strainer with round holes, with BSPT thread.  Material: zinc-plated steel. (AISI 304 and AISI 316 steel available on request).
	PM-RH25A	2	150	98	
	PM-RH30A	2.1/2	150	98	
	PM-RH35A	3	165	130	
	PM-RH40A	4	165	130	
	PM-RH60A	6	225	230	
	PM-RH80A	8	280	290	


picture	code	thread size [inch]	O.D. [mm]	height [mm]	description
	PM-RH20B	1.1/2	121	87	Cylindrical strainer with round holes, with NPT thread.  Material: zinc-plated steel. (AISI 304 and AISI 316 steel available on request).
	PM-RH25B	2	150	98	
	PM-RH30B	2.1/2	150	98	
	PM-RH35B	3	165	130	
	PM-RH40B	4	165	130	
	PM-RH60B	6	225	230	
	PM-RH80B	8	280	290	


picture	code	hose I.D. [mm]	O.D. [mm]	height [mm]	description
	PM-RD20T	40	121	165	Cylindrical strainer with round holes, with hose tail.  Material: zinc-plated steel. (AISI 304 and AISI 316 steel available on request).
	PM-RD25T	50	150	165	
	PM-RD35T	75	165	221	
	PM-RD40T	100	165	221	


picture	code	thread size [inch]	O.D. [mm]	height [mm]	description
	PM-RS20A	1.1/2	56	165	Long cylindrical strainer with round holes, with BSPT thread.  Material: zinc-plated steel. (AISI 304 and AISI 316 steel available on request).
	PM-RS25A	2	66	165	
	PM-RS30A	2.1/2	80	245	
	PM-RS35A	3	97	245	
	PM-RS40A	4	124	245	
	PM-RS60A	6	180	315	
	PM-RS80A	8	233	370	


## INDUSTRIAL FITTINGS - fittings, connectors

### Suction strainers

picture	code	thread size [inch]	O.D. [mm]	height [mm]	description
	PM-RS20B	1.1/2	56	165	Long cylindrical strainer with round holes, with NPT thread.  Material: zinc-plated steel. (AISI 304 and AISI 316 steel available on request).
	PM-RS25B	2	66	165	
	PM-RS30B	2.1/2	80	245	
	PM-RS35B	3	97	245	
	PM-RS40B	4	124	245	
	PM-RS60B	6	180	315	
	PM-RS80B	8	233	370	


picture	code	thread size [inch]	base diameter [mm]	height [mm]	description
	PM-SK20BHA	1.1/2	240	64	Conical suction strainer with holes in the bottom, with BSPT thread.  Material: zinc-plated steel. (AISI 304 and AISI 316 steel available on request).
	PM-SK25BHA	2	240	64	
	PM-SK35BHA	3	305	100	


picture	code	thread size [inch]	base diameter [mm]	height [mm]	description
	PM-SK20BHB	1.1/2	240	64	Conical suction strainer with holes in the bottom, with NPT thread.  Material: zinc-plated steel. (AISI 304 and AISI 316 steel available on request).
	PM-SK25BHB	2	240	64	
	PM-SK35BHB	3	305	100	


picture	code	thread size [inch]	base diameter [mm]	height [mm]	description
	PM-SK20THA	1.1/2	240	64	Conical suction strainer with holes in the bottom, with BSPT thread.  Material: zinc-plated steel. (AISI 304 and AISI 316 steel available on request).
	PM-SK25THA	2	240	64	
	PM-SK35THA	3	305	100	

## INDUSTRIAL FITTINGS - fittings, connectors

### Suction strainers


picture	code	thread size [inch]	base diameter [mm]	height [mm]	description
	PM-SK20THB	1.1/2	240	64	Conical suction strainer with holes in the top, with NPT thread.  Material: zinc-plated steel. (AISI 304 and AISI 316 steel available on request).
	PM-SK25THB	2	240	64	
	PM-SK35THB	3	305	100	


picture	code	thread size [inch]	O.D. [mm]	height [mm]	description
	PM-SH20A	1.1/2	121	87	Cylindrical suction strainer with square holes, with BSPT thread.  Material: zinc-plated steel. (AISI 304 and AISI 316 steel available on request).
	PM-SH25A	2	150	98	
	PM-SH30A	2.1/2	150	98	
	PM-SH35A	3	165	130	
	PM-SH40A	4	165	130	
	PM-SH60A	6	225	230	
	PM-SH80A	8	280	290	



picture	code	thread size [inch]	O.D. [mm]	height [mm]	description
	PM-SH20B	1.1/2	121	87	Cylindrical suction strainer with square holes, with NPT thread.  Material: zinc-plated steel. (AISI 304 and AISI 316 steel available on request).
	PM-SH25B	2	150	98	
	PM-SH30B	2.1/2	150	98	
	PM-SH35B	3	165	130	
	PM-SH40B	4	165	130	
	PM-SH60B	6	225	230	
	PM-SH80B	8	280	290	

# INDUSTRIAL FITTINGS - fittings, connectors

## Fittings - AK type


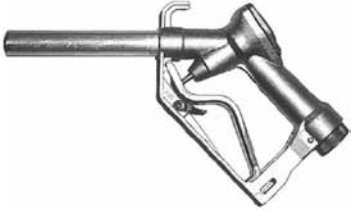




picture	code	thread size [BSP]	flange size [mm]	hose I.D. [inch]	flow diameter [mm]	description
	AK-RVST13-C17-SP	1/2	17	1/2	10	Fitting with BSP male thread with 200 mm hose protection spring.  Material: stainless steel. Working press.: up to 40 bar.
	AK-RVST13-C20-SP	1/2	20	1/2	10	
	AK-RVST16-C21-SP	1/2	21	5/8	13	
	AK-RVST19-C24-SP	1/2	24	3/4	14	

picture	code	thread size [BSPT]	flange size [mm]	hose I.D. [inch]	flow diameter [mm]	description
	AK-SWIFB13-C17	1/2	17	1/2	10	Swivel fitting with NPT male thread.  Material: stainless steel. Working press.: up to 40 bar.  * - with 200 mm hose protection spring.
	AK-SWIFB13-C20	1/2	20	1/2	10	
	AK-SWIFB13-C20-SP*	1/2	20	1/2	10	
	AK-SWIFB16-C21	1/2	21	5/8	13	
	AK-SWIFB16-C21SP*	1/2	21	5/8	13	
	AK-SWIFB19-C24	1/2	24	3/4	14	
	AK-SWIFB19-C24SP*	1/2	24	3/4	14	

picture	code	female thread size	male thread size	flow diameter [mm]	material	description
 	AK-SWM-09-08	1/2"	1/2"	9	brass	Swivel fitting with BSP female and BSP male thread.  Working press.: up to 30 bar.  Seal: - EPDM for brass - Viton for stainless steel
	AK-SWM-09-12	3/4"	1/2"	9		
	AK-SWM-12-12	3/4"	3/4"	12		
	AK-SWM-14-12-08	3/4"	1/2"	14		
	AK-SWM-18-16	1"	1"	18		
	AK-SWR-09-08	1/2"	1/2"	9	stainless steel	
	AK-SWR-09-12-08	3/4"	1/2"	9		
	AK-SWR-12-12	3/4"	3/4"	12		
	AK-SWR-14-12-08	3/4"	1/2"	14		
	AK-SWR-18-16	1"	1"	18		
	AK-SWC-09-08	1/2"	1/2"	9	brass chromium	
	AK-SWC-09-12-08	3/4"	1/2"	9		
AK-SWC-14-12-08	3/4"	1/2"	14			

## INDUSTRIAL FITTINGS - fittings, connectors

### Fuel nozzles

picture	code	connection	exit diameter	description
	BO-222	1" BSP female (swivel)	25 mm	Intended for diesel oil (not suitable for Ad-Blue and unleaded petrol). Not equipped with an automatic fuel shut off system. Not suitable for application on fuel dispensers at petrol stations. Material: polypropylene. Colour: black. Flow rate: 60 ÷ 80 l/min.
	BO-223	1" BSP female (swivel)	25 mm	Intended for diesel oil (not suitable for Ad-Blue and unleaded petrol). Not equipped with an automatic fuel shut off system. Not suitable for application on fuel dispensers at petrol stations. Material: aluminium. Colour: silver. Flow rate: 60 ÷ 120 l/min.
	BO-227	1" BSP female (swivel)	24 mm	Intended for diesel oil (not suitable for Ad-Blue and unleaded petrol). Equipped with an automatic fuel shut off system. Suitable for application on all fuel dispensers at petrol stations. Material: rubber coated aluminium. Colour: black. Flow rate: 60 l/min.
	BO-227V	1" BSP female (swivel)	21 mm	Intended for unleaded petrol (not suitable for AdBlue and diesel oil). Equipped with an automatic fuel shut off system. Suitable for application on all fuel dispensers at petrol stations. Material: rubber coated aluminium. Colour: green. Flow rate: 60 l/min.
	BO-223X	1" hose tail	18 mm	Intended for AdBlue and water. Not intended for diesel oil and unleaded petrol. Not equipped with an automatic fuel shut off system. Material: polyamide reinforced with fibre glass. Colour: blue. Flow rate: 60 l/min.
	BO-227X	1" BSP female (swivel)	18 mm	Intended for AdBlue and water. Not intended for diesel oil and unleaded petrol. Equipped with an automatic fuel shut off system. Suitable for application on all fuel dispensers at petrol stations. Material: rubber coated stainless steel. Colour: blue. Flow rate: 40 l/min.

# INDUSTRIAL FITTINGS - fittings, connectors

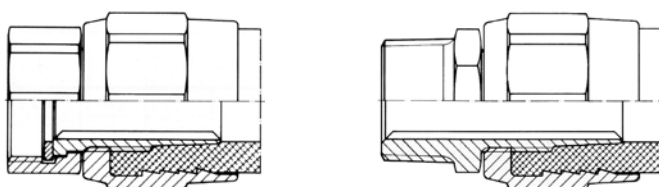


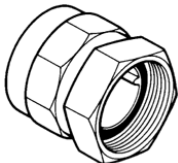
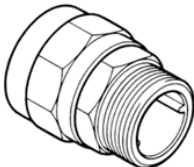
## Fuel fittings - S type

**Material:** Brass (stainless steel version also available)  
**Seal:** PU (polyurethane) - S1 type  
**Working press.:** Up to 16 bar  
**Vacuum:** Up to -0.8 bar  
**Working temp.:** From -20°C up to +65°C

**Characteristics:** Petrol, screw-to-connect hose couplings complying with EN 14424 standard, designed for rubber and thermoplastic hoses transferring flammable and non-flammable liquids and gases. Widely used in petrochemical industry, in hose assemblies used for transferring and dispensing of fuel, gas (e.g. LPG), chemicals and other liquids.

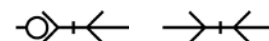
**Assembly:** Insert the hose into the ferrule. Check if the hose is accurately positioned using the inspection hole in the ferrule. Screw the coupling into the hose and into the ferrule at the same time and tighten both parts of the coupling. After tightening, the hose is pressed into the wall of a ferrule.



description	code	hose I.D. [mm]	wall thickness [mm]	thread size [inch]	weight [kg]
<b>S1 - BSP female thread</b>  	ZP-S1-050-1305-B	13	5	1/2	0.13
	ZP-S1-075-1505-B	15	5	3/4	0.14
	ZP-S1-075-1904-B	19	4	3/4	0.15
	ZP-S1-075-1905-B	19	5	3/4	0.16
	ZP-S1-075-1906-B	19	6	3/4	0.17
	ZP-S1-100-1505-B	15	5	1	0.15
	ZP-S1-100-1904-B	19	4	1	0.17
	ZP-S1-100-1905-B	19	5	1	0.18
	ZP-S1-100-1906-B	19	6	1	0.19
	ZP-S1-100-2505-B	25	5	1	0.21
	ZP-S1-100-2506-B	25	6	1	0.24
	ZP-S1-125-3206-B	32	6	1.1/4	0.38
	ZP-S1-150-3806-B	38	6.5	1.1/2	0.60
<b>S2 - BSPT male thread</b> <b>S3 - NPT male thread</b> <b>S4 - BSP male thread</b>  	ZP-S2-050-1305-B	13	5	1/2	0.12
	ZP-S2-075-1505-B	15	5	3/4	0.17
	ZP-S2-075-1904-B	19	4	3/4	0.17
	ZP-S2-075-1905-B	19	5	3/4	0.18
	ZP-S2-075-1906-B	19	6	3/4	0.19
	ZP-S3-075-1505-B	15	5	3/4	0.17
	ZP-S3-075-1904-B	19	4	3/4	0.17
	ZP-S3-075-1905-B	19	5	3/4	0.18
	ZP-S3-075-1906-B	19	6	3/4	0.19
	ZP-S3-100-2505-B	25	5	1	0.19
	ZP-S3-100-2506-B	25	6	1	0.20
	ZP-S4-100-1904-B	19	4	1	0.19
	ZP-S4-100-1905-B	19	5	1	0.20
	ZP-S4-100-1906-B	19	6	1	0.21
	ZP-S4-100-2505-B	25	5	1	0.25
	ZP-S4-100-2506-B	25	6	1	0.28
	ZP-S4-125-3206-B	32	6	1.1/4	0.44
	ZP-S4-150-3806-B	38	6.5	1.1/2	0.56

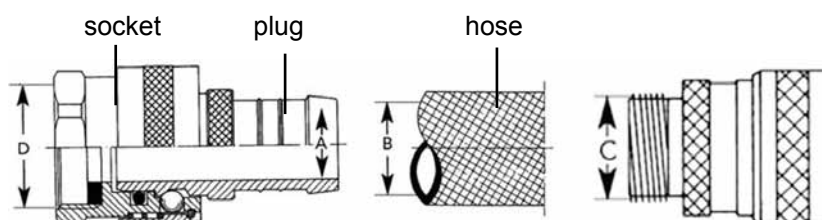
# INDUSTRIAL FITTINGS - quick release couplings






## NiTO 1/2" - 3/4" - 1" system - couplings for water



**Material:** Chromium plated brass  
**Working press.:** Up to 25 bar  
**Working temp.:** Up to +80°C  
**Sealing:** NBR - cannot be used with fuel and oil (option - Viton).  
 For valve O-ring made of EPDM.

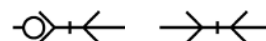
High quality quick release water couplings for industrial use. Available with a wide array of diameter combinations of hoses and threads, versions with free flow, valve, check valve, etc. Manufactured in three systems: 1/2", 3/4" and 1" with flow diameters (A): 1/2" (10 mm), 3/4" (15 mm) and 1" (20 mm). Elements of different systems are not interchangeable, e.g. 1/2" socket and 3/4" plug cannot be connected.



picture	description	1/2" SYSTEM		3/4" SYSTEM		1" SYSTEM	
		code	size	code	size	code	size
	Socket with female thread (D) + plug with hose tail (B).	NT-53506A3	D-1/2" x B-1/2"	NT-63506A3	D-3/4" x B-3/4"	X	X
		NT-535G6A3	D-1/2", 3/4", M22x1 x B-1/2"				
	Socket with female thread (D).	NT-53500A3	D-1/2"	NT-63500A3	D-3/4"	NT-73500A3	D-1"
		NT-53520A3	D-3/4"				
		NT-5352GA3	D-1/2", 3/4", M22x1				
	Socket with hose tail (B).	NT-5349SA3	B-3/8"	NT-6350SA3	B-3/4"	X	X
		NT-5350SA3	B-1/2"				
		NT-5350CA5	B-5/8"	NT-6350MA3	B-5/8"		
		NT-5351SA3	B-3/4"				
	Socket with female thread (D) and shut-off valve.	NT-53530A3	D-3/4"	NT-63530A3	D-3/4"	NT-73530A3	D-1"
		NT-5353GA3	D-1/2", 3/4", M22x1				
		NT-5353RA3	D-1/2", 3/4"				
	Socket with male thread (C).	NT-5350NA3	C-1/2"	X	X	X	X
		NT-5352NA3	C-3/4"				
		NT-5353NA3	C-1/2" (with valve)				

# INDUSTRIAL FITTINGS - quick release couplings

## NiTO 1/2" - 3/4" - 1" system - couplings for water

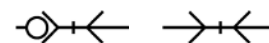


picture	description	1/2" SYSTEM		3/4" SYSTEM		1" SYSTEM		
		code	size	code	size	code	size	
	Socket with hose tail (B) and shut-off valve.	NT-5353SA3	B-1/2"	NT-6353SA3	B-3/4"	NT-7353SA3	B-1"	
		NT-5354SA3	B-3/4"					
	Plug blank cap.	X	X	X	X	NT-7350ZA3	-	
	Plug with hose tail (B).	NT-53600A3	B-1/2"	NT-63600A3	B-3/4"	NT-73600A3	B-1"	
		NT-5360BA3	B-3/8"					
		NT-5360CA3	B-5/8"	NT-6360BA3	B-1/2"	NT-7360BA3	B-3/4"	
		NT-5360DA3	B-1/4"	NT-6360CA3	B-5/8"	X	X	
		NT-5360EA3	B-3/4"					
	Plug with double hose tail (B).	NT-5360AA3	B-3/4", 1/2"	NT-6362AA3	B-3/4", 1/2"	NT-7360AA3	B-1.1/4", 1"	
				NT-6360AA3	B-1", 3/4"			
	Fitting with male thread (C) and hose tail (B).	NT-53670A3	C-1/2" x B-1/2"	NT-63670A3	C-3/4" x B-3/4"	NT-73670A3	C-1" x B-1"	
				NT-6367AA3	C-3/4" x B-1/2"			
	Fitting with male thread (C) and double hose tail (B).	NT-53680A3	C-1/2" x B-3/4", 1/2"	x	x	X	X	
	Plug with female thread (D).	NT-53610A3	D-1/2"	NT-63610A3	D-3/4"	NT-73610A3	D-1"	
		NT-5361AA3	D-3/4"					
		NT-5361BA3	D-3/8"	NT-6361AA3	D-1/2"			
		NT-5361GA3	D-1/2", 3/4", M22x1					
		NT-53620A3	D-M22x1					
	Plug with male thread (C).	NT-53640A3	C-1/2"	NT-63640A3	C-3/4"	NT-73640A3	C-1"	
		NT-5364AA3	C-3/4"					
		NT-5364BA3	C-3/8"	NT-6364AA3	C-1/2"	NT-7364BA3	C-3/4"	
		NT-5366AA3	C-M24x1					
		NT-5364NA3	C-M28x1					
		NT-5364TA3	C-3/4" with check valve					
	Plug with male thread (C) for gun.	NT-53611A3	C-1/2" Heavy Duty	X	X	X	X	
		NT-53615A3	C-3/4" NiTO II					
	Double plug.	NT-53650A3	-	X	X	X	X	
	Triple plug.	NT-53760A3	-	X	X	X	X	



# INDUSTRIAL FITTINGS - quick release couplings

## NiTO 1/2" - 3/4" - 1" system - couplings for water

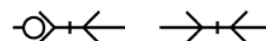


picture	description	1/2" SYSTEM		3/4" SYSTEM		1" SYSTEM	
		code	size	code	size	code	size
	Adapter female thread / male thread	NT-53690A3	3/4" x 1/2"	NT-63690A3	1" x 3/4"	X	X
		NT-5369AA3	3/4" x M22x1				
		NT-53700A3	M22x1 x 1/2"				
		NT-53720A3	M22x1 x 3/4"				
		NT-5369BA3	1/2" x M22x1				
		NT-5371AA3	1/2" x 3/4"				
	O-ring	NT-53470A8	-	NT-63470A8	-	NT-73470A8	-
	internal thread sealing (D)	NT-53440A8	D - 1/2"	NT-63440A8	D - 3/4"	NT-73440A8	D - 1"
		NT-5344AA8	D - M22x1				

picture	description	code	size	picture	description	code	size
	reducer male thread / male thread	NT-53730A3	M24x1 x 1/2"		reducer male thread / female thread	NT-53490A8	3/4" x 1/2"
		NT-53740A3	M24x1 x M22x1				
	reducer male thread / male thread	NT-5369DA3	M22x1 x M18x1		reducer male thread / female thread	NT-53480A8	3/4" x 1/2" - M22x1

## INDUSTRIAL FITTINGS - quick release couplings

### NiTO SS 1/2" - 3/4" - 1" system - couplings for water



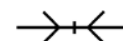
**Material:** AISI 316L  
**Working press.:** Up to 25 bar  
**Sealing:** Viton  
**Working temp.:** From -20°C up to +121°C

NiTO quick release couplings made of acid-resistant steel designed for application in pharmaceutical, chemical and food industry. Three coupling size systems: 1/2" (DN10), 3/4" (DN15) and 1" (DN20). The quick release couplings of different systems cannot be directly connected.

picture	description	1/2" SYSTEM		3/4" SYSTEM		1" SYSTEM	
		code	size	code	size	code	size
	Socket with female thread (D)	NT-54500A3	D-1/2"	NT-64500A3	D-3/4"	NT-74500A3	D - 1"
		NT-54520A3	D-3/4"				
	Socket with hose tail (B)	NT-5450SA3	B-1/2"	NT-6450SA3	B-3/4"	NT-7450SA3	B - 1"
	Socket with male thread (C)	NT-5450NA3	C-1/2"	X	X	X	X
	Socket with female thread (D) and shut-off valve	NT-54530A3	D-3/4"	NT-64530A3	D-3/4"	X	X
	Socket with hose tail (B) and shut-off valve	NT-5453SA3	B-1/2"	NT-6453SA3	B-3/4"	X	X
	Plug with female thread (D)	NT-54610A3	D-1/2"	NT-64610A3	D-3/4"	NT-74610A3	D - 1"
		NT-5461AA3	D-3/4"				
	Plug with hose tail (B)	NT-54600A3	B-1/2"	NT-64600A3	B-3/4"	NT-74600A3	B - 1"
	Plug with double hose tail (B)	NT-5460AA3	B-1/2", 3/4"	X	X	X	X
	Plug with male thread (C)	NT-54611A3	C-1/2"	NT-64611A3	C-3/4"	NT-74640A3	C - 1"
		NT-54615A3	C-3/4" (NiTO II)				
	Hose tail (B) with male thread (C)	NT-54670A3	C-1/2" x B-1/2"	NT-64670A3	C-3/4" x B-3/4"	X	X
	Reducing adapter male thread / female thread	NT-54490A3	3/4" x 1/2"	X	X	NT-74490A3	1" x 3/4"

# INDUSTRIAL FITTINGS - quick release couplings

## AKBO SS DN11.8 - couplings for water



**Material:** AISI 303/304L, balls - AISI 316

**Working press.:** Up to 200 bar

**Sealing:** Viton

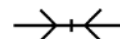
**Working temp.:** Up to +100°C

Full flow quick release couplings intended to connect water spray guns with hoses, lances and other accessories. BSP thread connection. Rubber socket protectors are optionally available to secure the coupling against damage if it falls on the floor.

picture	code	connection size	flow DN [mm]	spanner size [mm]	length [mm]	description
	AK-COUPPL-06-M	3/8"	10	30	49.5	Socket with male thread.
	AK-COUPPL-08-M	1/2"	11.8	30	49.5	
	AK-COUPPL-04-F	1/4"	11.8	30	44	Socket with female thread.
	AK-COUPPL-06-F	3/8"	11.8	30	44	
	AK-COUPPL-08-F	1/2"	11.8	30	44	
	AK-COUPPL-12-F	3/4"	11.8	32	44	
	AK-ADAPT-06-M	3/8"	10.4	22	39	Plug with male thread.
	AK-ADAPT-08-M	1/2"	11.8	22	39.8	
	AK-ADAPN-04-M	1/4"	8	16	42	Plug with male thread and two flat sides to fit a spanner.
	AK-ADAPT-04-F	1/4"	11.8	22	40.3	Plug with female thread.
	AK-ADAPT-08-F	1/2"	11.8	27	49.3	
	AK-ADAPW-11,5	D=11.5	11.5	-	30	Plug for welding.
	AK-ADAPN-06-F	3/8"	11.5	19	42	Plug with female thread and two flat sides to fit a spanner.
	AK-ADAPN-08-F	1/2"	11.5	22	42	
	AK-ADAPN-04-F	1/4"	11.5	17	55.2	Long plug with female thread and two flat sides to fit a spanner.
	AK-ADAPN-04-F-S	1/4"	11.5	17	40.3	Short plug with female thread and two flat sides to fit a spanner.
	AK-ADAPH13	12.8/13.3	10	no flange	57.5	Plug with hose tail 1/2".
	AK-ADAPH16-C21	15.8/16.8	10	flange 21	64	Plug with hose tail 5/8".
	AK-ADAPH19-C24	19.1/19.9	10	flange 24	65.2	Plug with hose tail 3/4".
	AK-COPROT1-BL	blue EPDM rubber				Socket protector.
	AK-COPROT1-BK	black EPDM rubber				
	AK-COPROT1-Y	yellow EPDM rubber				
	AK-COPRON2-BL	blue polyamide (nylon)				

## INDUSTRIAL FITTINGS - quick release couplings

### NiTO SC with a safety lock - couplings for water

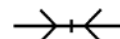


**Material:** Chrome-plated brass  
**Working press.:** Up to 25 bar  
**Working temp.:** Up to +150°C  
**Sealing:** Viton

Quick release couplings NiTO SC (Safety Coupling) are used for hot water applications (above +60°C), where an operator has a direct contact with couplings or when couplings are frequently disconnected (e.g. gun assembly). Due to their unique construction the couplings interlock when under pressure and disconnect only if the water supply is shut off. Particularly recommended for hot water guns connection.

picture	description	code	size
	Socket with hose tail (B) (for HEAVY DUTY and NiTO II gun)	NT-6150SA8	B-3/4"
		NT-6151SA8	B-1/2"
	Plug with male thread (C) (for HEAVY DUTY gun)	NT-61640A8	C-1/2"
	Plug with male thread (C) (for NiTO II gun)	NT-61650A3	C-3/4"
	Plug with hose tail (B)	NT-61660A3	B-1/2"
		NT-61670A3	B-3/4"

### NiTO CLICK 1/2" - 3/4" system - couplings for water



**Material:** Chrome-plated brass (matt - satin)  
**Working press.:** Up to 25 bar  
**Working temp.:** Up to +150°C  
**Sealing:** NBR - not suitable for oil and petrol (Viton seal as an option). EPDM O-ring for a valve.

NiTO CLICK quick release couplings are manufactured according to the profile of popular quick release plastic couplings with the same sealing type - O-ring on the plug external surface. They are fully compatible with plastic quick release couplings used in gardening, public facilities and industry. Made of metal - for long service life.

## INDUSTRIAL FITTINGS - quick release couplings

### NiTO CLICK 1/2" - 3/4" system - couplings for water

picture	description	1/2" CLICK SYSTEM		3/4" CLICK SYSTEM	
		code	size	code	size
	Adapter - NiTO standard socket with NiTO CLICK plug	NT-59810A3	-	x	x
	Adapter - NiTO CLICK socket with NiTO standard plug	NT-59820A3	-	x	x
	Socket with female thread (D)	NT-5952GA3	D - 1/2", 3/4", M22x1	NT-69500A3	D - 3/4"
	Socket with male thread (C)	NT-5950NA3	C - 1/2"	x	x
	Socket with hose tail (B)	NT-5949SA3	B - 3/8"	NT-6950SA3	B - 3/4"
		NT-5950SA3	B - 1/2"		
		NT-5950CA3	B - 5/8"		
		NT-5951SA3	B - 3/4"		
	Socket with hose tail (B) with shut-off valve	NT-5953SA3	B - 1/2"	x	x
	Plug with hose tail (B)	NT-59600A3	B - 1/2"	NT-69600A3	B - 3/4"
				NT-6960BA3	B - 1/2"
	Plug with double hose tail (B)	NT-5960AA3	B - 1/2", 3/4"	x	x
	Plug with female thread (D)	NT-5961GA3	D - 1/2", 3/4", M22x1	NT-69610A3	D - 3/4"
	Plug with male thread (C)	NT-59640A3	C - 1/2"	NT-69640A3	C - 3/4"
		NT-5964AA3	C - 3/4"		

# INDUSTRIAL FITTINGS - quick release couplings


## DYROS couplings - 6 series


**Characteristics:** Mini couplings 6 series are used wherever small dimensions, reliability and safety are required. The valves of the couplings ensure excellent tightness at very low pressure. Sockets without valves are marked with OV at the end of a code. All parts of the couplings are made of brass, whereas locking rings, springs and balls of high-grade stainless steel. Working pressure up to 15 bar. Sockets covered with red or blue plastic are available on request.


**Application:**


- mould coolants in plastics industry,
- compressed air installations,
- technical gas cylinders,
- many other branches of technology

**Sealing:** O-rings are made of Viton that is resistant to mineral oils, lubricants, petrol, hydrocarbons (methane, ethane, propane, ethylene, acetylene), acids, bases and many other chemicals. Viton withstands temperatures from -25°C up to +200°C (with peaks up to +230°C).

	code	hose I.D. [mm]	full flow DN [mm]	description
	DY-LK613	4.7	3	Socket (straight) with hose tail and shut-off valve. Material: brass. Seal: Viton.
	DY-LK614	6.3	4	
	DY-LK615	8	6	
	DY-LK616	9.5	6	
	DY-LK618	12.7	6	

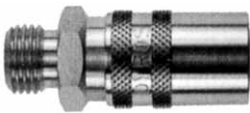
	code	hose I.D. [mm]	full flow DN [mm]	description
	DY-VK614-90	6.3	4	90° socket with hose tail and shut-off valve Material: brass. Seal: Viton.
	DY-VK615-90	8	6	
	DY-VK616-90	9.5	6	

	code	hose I.D. [mm]	full flow DN [mm]	description
	DY-VK614-45	6.3	4	45° socket with hose tail and shut-off valve Material: brass. Seal: Viton.
	DY-VK615-45	8	6	
	DY-VK616-45	9.5	6	


	code	thread size	full flow DN [mm]	description
	DY-LKM610	M10x1	6	Socket (straight) with female thread and shut-off valve. Material: brass. Seal: Viton.
	DY-LKM645	M14x1.5	6	
	DY-LKM665	M16x1.5	6	
	DY-LKR618	1/8"	6	
	DY-LKR614	1/4"	6	
	DY-LKR638	3/8"	6	


## INDUSTRIAL FITTINGS - quick release couplings


### DYROS couplings - 6 series

	code	thread size	full flow DN [mm]	description
	DY-LKUM610	M10x1	6	Socket (straight) with male thread and shut-off valve. Material: brass. Seal: Viton.
	DY-LKUM645	M14x1.5	6	
	DY-LKUM665	M16x1.5	6	
	DY-LKUR618	1/8"	6	
	DY-LKUR614	1/4"	6	
	DY-LKUR638	3/8"	6	

	code	thread size	full flow DN [mm]	description
	DY-VKUM610-45	M10x1	6	45° socket with male thread and shut-off valve. Material: brass. Seal: Viton.
	DY-VKUM645-45	M14x1.5	6	
	DY-VKUR618-45	1/8"	6	
	DY-VKUR614-45	1/4"	6	


	code	thread size	full flow DN [mm]	description
	DY-VKUM610-90	M10x1	6	90° socket with male thread and shut-off valve. Material: brass. Seal: Viton.
	DY-VKUM645-90	M14x1.5	6	
	DY-VKUR618-90	1/8"	6	
	DY-VKUR614-90	1/4"	6	

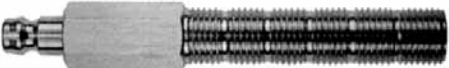
	code	thread size	full flow DN [mm]	description
	DY-N608	M8x0.75	4.3	Plug with male thread without valve. Material: brass.
	DY-N610	M10x1	6	
	DY-N610-1.5	M10x1.5	6	
	DY-N645	M14x1.5	6	
	DY-N618	1/8"	6	
	DY-N614	1/4"	6	
	DY-N638	3/8"	6	


	code	thread size	full flow DN [mm]	description
	DY-N645-V	M14x1.5	6	Plug with male thread and shut-off valve. Material: brass. Seal: Viton.
	DY-N614-V	1/4"	6	
	DY-N638-V	3/8"	6	


# INDUSTRIAL FITTINGS - quick release couplings


## DYROS couplings - 6 series


	code	thread size	full flow DN [mm]	description
	DY-N610-50	M10x1	6	Plug with male thread without valve. L = 50 mm. Material: brass.
	DY-N645-50	M14x1.5	6	
	DY-N618-50	1/8"	6	
	DY-N614-50	1/4"	6	

	code	thread size	full flow DN [mm]	description
	DY-N610-100	M10x1	6	Plug with male thread without valve. L = 100 mm. Material: brass.
	DY-N645-100	M14x1.5	6	
	DY-N618-100	1/8"	6	
	DY-N614-100	1/4"	6	
	DY-N638-100	3/8"	6	

	code	thread size	full flow DN [mm]	description
	DY-NI618	1/8"	6	Plug with female thread without valve. Material: brass.
	DY-NI614	1/4"	6	

	code	thread size	full flow DN [mm]	description
	DY-VN608	M8x0.75	4.3	90° plug with male thread without valve. Material: brass.
	DY-VN610	M10x1	6	
	DY-VN645	M14x1.5	6	
	DY-VN618	1/8"	6	
	DY-VN614	1/4"	6	
	DY-VN638	3/8"	6	


	code	hose I.D. [mm]	full flow DN [mm]	description
	DY-N623	4.7	3	Plug with hose tail without valve. Material: brass.
	DY-N624	6.3	4	
	DY-N625	8	6	
	DY-N626	9.5	6	
	DY-N628	12.7	6	


	code	pipe O.D. [mm]	full flow DN [mm]	description
	DY-N614-K8	8	6	Plug with a connection for a cutting ring, without valve. Material: brass.
	DY-N638-K10	10	6	





## INDUSTRIAL FITTINGS - quick release couplings

### DYROS couplings - 6 series

	code	pipe O.D. [mm]	full flow DN [mm]	description
	DY-VN614-K8	8	6	90° plug with a connection for a cutting ring, without valve. Material: brass.
	DY-VN638-K10	10	6	

	code	pipe O.D. [mm]	full flow DN [mm]	description
	DY-N608-50	10	6	Plug with a brass tube, without valve (L = 50, 65, 80, 100, 120, 240, 360 mm). Material: brass.
	DY-N608-65	10	6	
	DY-N608-80	10	6	
	DY-N608-100	10	6	
	DY-N608-120	10	6	
	DY-N608-240	10	6	
	DY-N608-360	10	6	

	code	series	full flow DN [mm]	description
	DY-N600D	6 x 6	6	Double plug. Material: brass.
	DY-N600-900D	6 x 90	6	

	code	coupling series	plug series	description
	DY-LK600-300	6	30	Socket - plug Adapter. Material: brass.
	DY-LK600-400	6	40	
	DY-LK600-900	6	90	

# INDUSTRIAL FITTINGS - quick release couplings


## DYROS couplings - 30 series


**Characteristics:** Mini couplings 30 series are used wherever small dimensions, reliability and safety are required. The valves of couplings ensure excellent tightness at very low pressure.  
Sockets without valves are marked with OV at the end of a code.  
All parts of the couplings are made of brass, whereas locking rings, springs and balls of high-grade stainless steel. Working pressure up to 15 bar.  
Sockets covered with red or blue plastic are available on request.


**Application:**

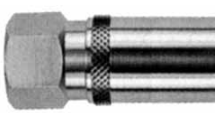
- mould coolants in plastics industry,
- compressed air installations,
- technical gas cylinders,
- many other branches of technology.

**Sealing:** O-rings are made of Viton that is resistant to mineral oils, lubricants, petrol, hydrocarbons (methane, ethane, propane, ethylene, acetylene), acids, bases and many other chemicals. Viton withstands temperatures from -25°C up to +200°C (with peaks up to +230°C).

	code	hose I.D. [mm]	full flow DN [mm]	description Socket (straight) with hose tail and shut-off valve. Material: brass. Seal: Viton.
	DY-LK313	4.7	3	
	DY-LK314	6.3	4	
	DY-LK315	8	6	
	DY-LK316	9.5	6	
	DY-LK318	12.7	6	

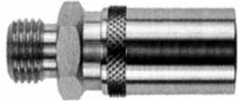
	code	hose I.D. [mm]	full flow DN [mm]	description 90° socket with hose tail and shut-off valve Material: brass. Seal: Viton.
	DY-VK314-90	6.3	4	
	DY-VK315-90	8	6	
	DY-VK316-90	9.5	6	


	code	hose I.D. [mm]	full flow DN [mm]	description 45° socket with hose tail and shut-off valve Material: brass. Seal: Viton.
	DY-VK314-45	6.3	4	
	DY-VK315-45	8	6	
	DY-VK316-45	9.5	6	


	code	thread size	full flow DN [mm]	description Socket (straight) with female thread and shut-off valve. Material: brass. Seal: Viton.
	DY-LKM310	M10x1	6	
	DY-LKM345	M14x1.5	6	
	DY-LKM365	M16x1.5	6	
	DY-LKR318	1/8"	6	
	DY-LKR314	1/4"	6	
	DY-LKR338	3/8"	6	


## INDUSTRIAL FITTINGS - quick release couplings

### DYROS couplings - 30 series

	code	thread size	full flow DN [mm]	description  Socket (straight) with male thread and shut-off valve. Material: brass. Seal: Viton.
	DY-LKUM310	M10x1	6	
	DY-LKUM345	M14x1.5	6	
	DY-LKUM365	M16x1.5	6	
	DY-LKUR318	1/8"	6	
	DY-LKUR314	1/4"	6	
	DY-LKUR338	3/8"	6	

	code	thread size	full flow DN [mm]	description  45° socket with male thread and shut-off valve. Material: brass. Seal: Viton.
	DY-VKUM310-45	M10x1	6	
	DY-VKUM345-45	M14x1.5	6	
	DY-VKUR318-45	1/8"	6	
	DY-VKUR314-45	1/4"	6	


	code	thread size	full flow DN [mm]	description  90° socket with male thread and shut-off valve. Material: brass. Seal: Viton.
	DY-VKUM310-90	M10x1	6	
	DY-VKUM345-90	M14x1.5	6	
	DY-VKUR318-90	1/8"	6	
	DY-VKUR314-90	1/4"	6	


	code	thread size	full flow DN [mm]	description  Plug with male thread without valve. Material: brass.
	DY-N310	M10x1	6	
	DY-N345	M14x1.5	6	
	DY-N318	1/8"	6	
	DY-N314	1/4"	6	
	DY-N338	3/8"	6	


	code	thread size	full flow DN [mm]	description  Plug with male thread and shut-off valve. Material: brass. Seal: Viton.
	DY-N345-V	M14x1.5	6	
	DY-N314-V	1/4"	6	
	DY-N338-V	3/8"	6	


# INDUSTRIAL FITTINGS - quick release couplings


## DYROS couplings - 30 series

	code	thread size	full flow DN [mm]	description Plug with male thread without valve. L = 100 mm. Material: brass.
	DY-N310-100	M10x1	6	
	DY-N345-100	M14x1.5	6	
	DY-N318-100	1/8"	6	
	DY-N314-100	1/4"	6	
	DY-N338-100	3/8"	6	

	code	thread size	full flow DN [mm]	description Plug with female thread without valve. Material: brass.
	DY-NI318	1/8"	6	
	DY-NI314	1/4"	6	
	DY-NI338	3/8"	6	


	code	thread size	full flow DN [mm]	description 90° plug with male thread without valve. Material: brass.
	DY-VN310	M10x1	6	
	DY-VN345	M14x1.5	6	
	DY-VN318	1/8"	6	
	DY-VN314	1/4"	6	
	DY-VN338	3/8"	6	


	code	hose I.D. [mm]	full flow DN [mm]	description Plug with hose tail without valve. Material: brass.
	DY-N324	6.3	4	
	DY-N325	8	6	
	DY-N326	9.5	6	
	DY-N328	12.7	6	


	code	pipe O.D. [mm]	full flow DN [mm]	description Plug with a connection for a cutting ring, without valve. Material: brass.
	DY-N314-K8	8	6	
	DY-N338-K10	10	6	


## INDUSTRIAL FITTINGS - quick release couplings


### DYROS couplings - 30 series

	code	pipe O.D. [mm]	full flow DN [mm]	description
	DY-VN314-K8	8	6	90° plug with a connection for a cutting ring, without valve. Material: brass.
	DY-VN338-K10	10	6	

	code	pipe O.D. [mm]	full flow DN [mm]	description
	DY-N308-120	10	6	Plug with a brass tube, without valve (L = 120, 240, 360 mm). Material: brass.
	DY-N308-240	10	6	
	DY-N308-360	10	6	

	code	coupling series	plug series	description
	DY-LK300-400	30	40	Adapter coupling - plug. Material: brass.
	DY-LK300-600	30	6	
	DY-LK300-900	30	90	

	code	coupling series	plug series	description
	DY-VK300-400-90	30	40	90° Adapter coupling - plug. Material: brass.
	DY-VK300-600-90	30	6	
	DY-VK300-900-90	30	90	

	code	coupling series	plug series	description
	DY-VK300-400-45	30	40	45° Adapter coupling - plug. Material: brass.
	DY-VK300-600-45	30	6	
	DY-VK300-900-45	30	90	

# INDUSTRIAL FITTINGS - quick release couplings


## DYROS couplings - 40 series


**Characteristics:** Mini couplings 40 series are used wherever small dimensions, reliability and safety are required. The valves of the couplings ensure excellent tightness at very low pressure. Sockets without valves are marked with OV at the end of a code.  
All parts of the couplings are made of brass, whereas locking rings, springs and balls of stainless steel. Working pressure up to 15 bar.  
Items marked with \* can be also delivered with plugs made of stainless steel.  
Sockets covered with red or blue plastic are available on request.


**Application:**


- mould coolants in plastics industry,
- compressed air installations,
- technical gas cylinders,
- many other branches of technology.

**Sealing:** O-rings are made of Viton that is resistant to mineral oils, lubricants, petrol, hydrocarbons (methane, ethane, propane, ethylene, acetylene), acids, bases and many other chemicals. Viton withstands temperatures from -25°C up to +200°C (with peaks up to +230°C).

	code	hose I.D. [mm]	full flow DN [mm]	description
	DY-LK416	9.5	7	Socket (straight) with hose tail and shut-off valve. Material: brass. Seal: Viton.
	DY-LK411	11	9	
	DY-LK418	12.7	9	
	DY-LK458	15.85	9	

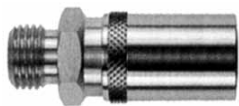




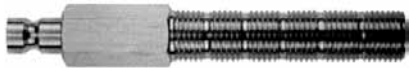
	code	hose I.D. [mm]	full flow DN [mm]	description
	DY-VK411-90	11	9	90° socket with hose tail and shut-off valve. Material: brass. Seal: Viton.
	DY-VK418-90	12.7	9	

	code	hose I.D. [mm]	full flow DN [mm]	description
	DY-VK411-45	11	9	45° socket with hose tail and shut-off valve. Material: brass. Seal: Viton.
	DY-VK418-45	12.7	9	

	code	thread size	full flow DN [mm]	description
	DY-LKM445	M14x1.5	9	Socket (straight) with female thread and shut-off valve. Material: brass. Seal: Viton.
	DY-LKM465	M16x1.5	9	
	DY-LKM485	M18x1.5	9	
	DY-LKR414	1/4"	9	
	DY-LKR438	3/8"	9	
	DY-LKR412	1/2"	9	


# INDUSTRIAL FITTINGS - quick release couplings


## DYROS couplings - 40 series


	code	thread size	full flow DN [mm]	description
	DY-LKUM445	M14x1.5	9	Socket (straight) with male thread and shut-off valve. Material: brass. Seal: Viton.
	DY-LKUM465	M16x1.5	9	
	DY-LKUM485	M18x1.5	9	
	DY-LKUR414	1/4"	9	
	DY-LKUR438	3/8"	9	
	DY-LKUR412	1/2"	9	
	code	thread size	full flow DN [mm]	description
	DY-VKUM445-45	M14x1.5	9	45° socket with male thread and shut-off valve. Material: brass. Seal: Viton.
	DY-VKUM465-45	M16x1.5	9	
	DY-VKUM485-45	M18x1.5	9	
	DY-VKUR414-45	1/4"	9	
	DY-VKUR438-45	3/8"	9	
	code	thread size	full flow DN [mm]	description
	DY-VKUM445-90	M14x1.5	9	90° socket with male thread and shut-off valve. Material: brass. Seal: Viton.
	DY-VKUM465-90	M16x1.5	9	
	DY-VKUM485-90	M18x1.5	9	
	DY-VKUR414-90	1/4"	9	
	DY-VKUR438-90	3/8"	9	
	code	thread size	full flow DN [mm]	description
	DY-N414	1/4" BSPT	9	Plug with male thread without valve. Material: brass.
	DY-N438	3/8" BSPT	9	
	DY-N410	M10x1	6	
	DY-N418	1/8" BSP	9	
	DY-N412	1/2" BSP	9	
	code	thread size	full flow DN [mm]	description
	DY-N414-V	1/4"	9	Plug with male thread and shut-off valve. Material: brass. Seal: Viton.
	DY-N438-V	3/8"	9	
	DY-N412-V	1/2"	9	
	code	thread size	full flow DN [mm]	description
	DY-N418-100	1/8"	6	Plug with male thread without valve, L = 100 mm. Material: brass.
	DY-N414-100	1/4"	9	
	DY-N438-100	3/8"	9	
	DY-N410-100	M10x1	6	


# INDUSTRIAL FITTINGS - quick release couplings


## DYROS couplings - 40 series


	code	thread size	full flow DN [mm]	description
	DY-NI418	1/8"	9	Plug with female thread without valve. Material: brass.
	DY-NI414	1/4"	9	
	DY-NI438	3/8"	9	
	DY-NI412	1/2"	9	

	code	thread size	full flow DN [mm]	description
	DY-VN414	1/4"	9	90° plug with male thread without valve. Material: brass.
	DY-VN438	3/8"	9	

	code	hose I.D. [mm]	full flow DN [mm]	description
	DY-N426	9.5	7	Plug with hose tail without valve. Material: brass.
	DY-N428	12.7	9	

	code	pipe O.D. [mm]	full flow DN [mm]	description
	DY-N414-K8	8	9	Plug with a connection for a cutting ring, without valve. Material: brass.
	DY-N438-K10	10	9	

	code	pipe O.D. [mm]	full flow DN [mm]	description
	DY-VN414-K8	8	9	90° plug with a connection for a cutting ring, without valve. Material: brass.
	DY-VN438-K10	10	9	

	code	pipe O.D. [mm]	full flow DN [mm]	description
	DY-N408-150	14	9	Plug with a brass tube, without valve (L = 150, 300, 450 mm). Material: brass.
	DY-N408-300	14	9	
	DY-N408-450	14	9	



# INDUSTRIAL FITTINGS - quick release couplings

## DYROS couplings - 80 series

**Characteristics:** Mini couplings 80 series are used wherever small dimensions, reliability and safety are required. The valves of the couplings ensure excellent tightness at very low pressure. Sockets without valves are marked with OV at the end of a code.


All parts of the couplings are made of brass, whereas locking rings, springs and balls of stainless steel. Working pressure up to 15 bar.


Sockets covered with red or blue plastic are available on request.


**Application:**


- mould coolants in plastics industry,
- compressed air installations,
- technical gas cylinders,
- in operating rooms,
- many other branches of technology,

**Sealing:** O-rings are made of Viton that is resistant to mineral oils, lubricants, petrol, hydrocarbons (methane, ethane, propane, ethylene, acetylene), acids, bases and many other chemicals. Viton withstands temperatures from -25°C up to +200°C (with peaks up to +230°C).

	code	hose I.D. [mm]	full flow DN [mm]	description
	DY-LK818	12.7	13	Socket (straight) with hose tail and shut-off valve. Material: brass. Seal: Viton.
	DY-LK819	19	13	


	code	hose I.D. [mm]	full flow DN [mm]	description
	DY-VK819-90	19	13	90° socket with hose tail and shut-off valve. Material: brass. Seal: Viton.


	code	hose I.D. [mm]	full flow DN [mm]	description
	DY-VK819-45	19	13	45° socket with hose tail and shut-off valve. Material: brass. Seal: Viton.


	code	thread size	full flow DN [mm]	description
	DY-LKUR812	1/2"	13	Socket (straight) with male thread and shut-off valve. Material: brass. Seal: Viton.
	DY-LKUR834	3/4"	13	
	DY-LKUM824	M24x1.5	13	


# INDUSTRIAL FITTINGS - quick release couplings


## DYROS couplings - 80 series

	code	thread size	full flow DN [mm]	description
	DY-VKUR812-90	1/2"	13	90° socket with male thread and shut-off valve. Material: brass. Seal: Viton.
	DY-VKUR834-90	3/4"	13	
	DY-VKUM824-90	M24x1.5	13	

	code	thread size	full flow DN [mm]	description
	DY-VKUR812-45	1/2"	13	45° socket with male thread and shut-off valve. Material: brass. Seal: Viton.
	DY-VKUR834-45	3/4"	13	
	DY-VKUM824-45	M24x1.5	13	


	code	hose I.D. [mm] thread [inch]	full flow DN [mm]	description
	DY-LKUR834-19	9.5 3/4	13	Socket with hose tail, male thread and shut-off valve. Material: brass. Seal: Viton.


	code	coupling series	plug series	description
	DY-LK800-400	80	40	Adapter socket - plug. Material: brass. Seal: Viton.
	DY-LK800-900	80	90	


	code	thread size	full flow DN [mm]	description
	DY-N812	1/2"	13	Plug with male thread without valve. Material: brass.
	DY-N834	3/4"	13	
	DY-N824	M24x1.5	13	


## INDUSTRIAL FITTINGS - quick release couplings


### DYROS couplings - 80 series

	code	thread size	full flow DN [mm]	description
	DY-VN812	1/2"	13	90° plug with male thread without valve. Material: brass.
	DY-VN834	3/4"	13	
	DY-VN824	M24x1.5	13	

	code	thread size	full flow DN [mm]	description
	DY-N812-100	1/2"	13	Plug with male thread without valve, L=100 mm. Material: brass.

	code	thread size	full flow DN [mm]	description
	DY-N812-V	1/2"	13	Plug with male thread and shut-off valve. Material: brass. Seal: Viton.
	DY-N834-V	3/4"	13	
	DY-N824-V	M24x1.5	13	

	code	hose I.D. [mm]	full flow DN [mm]	description
	DY-N828	12.7	10	Plug with hose tail without valve. Material: brass.
	DY-N819	19	13	

	code	pipe O.D. [mm]	full flow DN [mm]	description
	DY-N808-500	21	13	Plug with a brass tube, without valve (L = 500 mm). Material: brass.

# INDUSTRIAL FITTINGS - quick release couplings


## DYROS couplings - 90 series


**Characteristics:** Mini couplings 90 series are used wherever small dimensions, reliability and safety are required. The valves of the couplings ensure excellent tightness at very low pressure. Sockets without valves are marked with OV at the end of a code number.  
All parts of the couplings are made of brass, whereas locking rings, springs and balls of high-grade stainless steel. Working pressure up to 15 bar.  
Items marked with \* can be also delivered with plugs made of stainless steel.  
Sockets covered with red or blue plastic are available on request.


**Application:**


- mould coolants in plastics industry,
- compressed air installations,
- technical gas cylinders,
- many other branches of technology.

**Sealing:** O-rings are made of Viton that is resistant to mineral oils, lubricants, petrol, hydrocarbons (methane, ethane, propane, ethylene, acetylene), acids, bases and many other chemicals. Viton withstands temperatures from -25°C up to +200°C (with peaks up to +230°C).

	code	hose I.D. [mm]	full flow DN [mm]	description Socket (straight) with hose tail and shut-off valve. Material: brass. Seal: Viton.
	DY-LK916	9.5	7	
	DY-LK911	11	9	
	DY-LK918	12.7	9	
	DY-LK958	15.85	9	







	code	hose I.D. [mm]	full flow DN [mm]	description 90° socket with hose tail and shut-off valve. Material: brass. Seal: Viton.
	DY-VK911-90	11	9	
	DY-VK918-90	12.7	9	

	code	hose I.D. [mm]	full flow DN [mm]	description 45° socket with hose tail and shut-off valve. Material: brass. Seal: Viton.
	DY-VK911-45	11	9	
	DY-VK918-45	12.7	9	

	code	thread size	full flow DN [mm]	description Socket (straight) with female thread and shut-off valve. Material: brass. Seal: Viton.
	DY-LKM945	M14x1.5	9	
	DY-LKM965	M16x1.5	9	
	DY-LKM985	M18x1.5	9	
	DY-LKR914	1/4"	9	
	DY-LKR938	3/8"	9	
	DY-LKR912	1/2"	9	


# INDUSTRIAL FITTINGS - quick release couplings

## DYROS couplings - 90 series


	code	thread size	full flow DN [mm]	description
	DY-LKUM945	M14x1.5	9	Socket (straight) with male thread and shut-off valve. Material: brass. Seal: Viton.
	DY-LKUM965	M16x1.5	9	
	DY-LKUM985	M18x1.5	9	
	DY-LKUR914	1/4"	9	
	DY-LKUR938	3/8"	9	
	DY-LKUR912	1/2"	9	
	code	thread size	full flow DN [mm]	description
	DY-VKUM945-45	M14x1.5	9	45° socket with male thread and shut-off valve. Material: brass. Seal: Viton.
	DY-VKUM965-45	M16x1.5	9	
	DY-VKUM985-45	M18x1.5	9	
	DY-VKUR914-45	1/4"	9	
	DY-VKUR938-45	3/8"	9	
	code	thread size	full flow DN [mm]	description
	DY-VKUM945-90	M14x1.5	9	90° socket with male thread and shut-off valve. Material: brass. Seal: Viton.
	DY-VKUM965-90	M16x1.5	9	
	DY-VKUM985-90	M18x1.5	9	
	DY-VKUR914-90	1/4"	9	
	DY-VKUR938-90	3/8"	9	
	code	thread size	full flow DN [mm]	description
	DY-N918*	1/8"	6	Plug with male thread without valve. Material: brass.
	DY-N914*	1/4"	9	
	DY-N938*	3/8"	9	
	DY-N912	1/2"	9	
	DY-N910	M10x1	6	
	DY-N910-1.5	M10x1.5	6	
	DY-N945	M14x1.5	9	
	DY-N965	M16x1.5	9	
	code	thread size	full flow DN [mm]	description
	DY-N914-V	1/4"	9	Plug with male thread and shut-off valve. Material: brass. Seal: Viton.
	DY-N938-V	3/8"	9	
	DY-N945-V	M14x1.5	9	
	DY-N965-V	M16x1.5	9	
	code	thread size	full flow DN [mm]	description
	DY-N918-100	1/8"	6	Plug with male thread without valve. L = 100 mm. Material: brass.
	DY-N914-100*	1/4"	9	
	DY-N938-100*	3/8"	9	
	DY-N945-100	M14x1.5	9	
	DY-N965-100	M16x1.5	9	


# INDUSTRIAL FITTINGS - quick release couplings


## DYROS couplings - 90 series


	code	thread size	full flow DN [mm]	description
	DY-NI918	1/8"	9	Plug with female thread without valve. Material: brass.
	DY-NI914	1/4"	9	
	DY-NI938	3/8"	9	
	DY-NI912	1/2"	9	

	code	thread size	full flow DN [mm]	description
	DY-VN914*	1/4"	9	90° plug with male thread without valve. Material: brass.
	DY-VN938*	3/8"	9	
	DY-VN945	M14x1.5	9	
	DY-VN965	M16x1.5	9	

	code	hose I.D. [mm]	full flow DN [mm]	description
	DY-N926	9.5	7	Plug with hose tail without valve. Material: brass.
	DY-N928	12.7	9	


	code	pipe O.D. [mm]	full flow DN [mm]	description
	DY-N914-K8	8	9	Plug with a connection for a cutting ring, without valve. Material: brass.
	DY-N938-K10	10	9	


	code	pipe O.D. [mm]	full flow DN [mm]	description
	DY-VN914-K8	8	9	90° plug with a connection for a cutting ring, without valve. Material: brass.
	DY-VN938-K10	10	9	


	code	pipe O.D. [mm]	full flow DN [mm]	description
	DY-N908-70	14	9	Plug with a brass tube, without valve (L = 70, 150, 300, 450 mm). Material: brass.
	DY-N908-150	14	9	
	DY-N908-300	14	9	
	DY-N908-450	14	9	


## INDUSTRIAL FITTINGS - quick release couplings


### DYROS couplings - accessories

	code	thread size	thread length	size of hexagon spanner	description Socket plug of mould base. Material: brass.
	DY-KP-2106	M6x0.75	7	3	
	DY-KP-2108	M8x0.75	8	4	
	DY-KP-2110	M10x1	8	5	
	DY-KP-2125	M12x1.5	8	6	
	DY-KP-2145	M14x1.5	10	7	
	DY-KP-2118	BSPT 1/8"	10	5	
	DY-KP-2114	BSPT 1/4"	10	7	
	DY-KP-2138	BSPT 3/8"	10	8	
	DY-KP-2112	BSPT 1/2"	10	10	

	code	coupling series	bridge length [mm]	description Bridge with two couplings and inter-connecting brass tube. Material: brass.
	DY-LKD668-125	6	125	
	DY-LKD668-250	6	250	
	DY-LKD668-500	6	500	

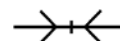
	code	coupling series	bridge length [mm]	description Bridge with two couplings and inter-connecting brass tube. Material: brass.
	DY-LKD368-125	30	125	
	DY-LKD368-250	30	250	
	DY-LKD368-500	30	500	

	code	coupling series	bridge length [mm]	description Bridge with two couplings and inter-connecting brass tube. Material: brass.
	DY-LKD481-125	40	125	
	DY-LKD481-250	40	250	
	DY-LKD481-500	40	500	

	code	coupling series	bridge length [mm]	description Bridge with two couplings and inter-connecting brass tube. Material: brass.
	DY-LKD981-125	90	125	
	DY-LKD981-250	90	250	
	DY-LKD981-500	90	500	

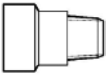
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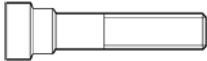
### TUTHILL couplings for moulding equipment




#### J-70000 series

**Working press.:** 10 bar  
**Working temp.:** Up to +160°C  
**Material:** Nickel-plated brass  
**Seal:** Viton  
**Application:** Cooling or heat regulation with water/oil.  
**Male threads:** PTFE covered (NPT on request)  
**Interchangeable:** Compatible with couplings of the same plug design

	code	thread size [BSPT]	full flow DN [mm]	description
	TH-JL7083618	1/8"	8	
	TH-JL7083614	1/4"	8	
	TH-JL7083638	3/8"	8	
	TH-JL7123638	3/8"	12	
	TH-JL7123612	1/2"	12	

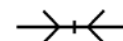
	code	thread size [BSPP]	length [mm]	description
	TH-JL7083118	1/8"	50	
	TH-JL7083218	1/8"	100	
	TH-JL7083318	1/8"	150	
	TH-JL7083114	1/4"	50	
	TH-JL7083214	1/4"	100	
	TH-JL7083314	1/4"	150	
	TH-JL7083414	1/4"	200	
	TH-JL7083514	1/4"	250	

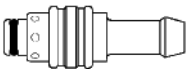
	code	colour	full flow DN [mm]	description
	TH-J62P082	red	8	
	TH-J62P083	blue	8	
	TH-J62P122	red	12	
	TH-J62P123	blue	12	

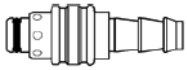


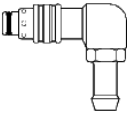
# INDUSTRIAL FITTINGS - quick release couplings

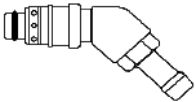
## TUTHILL couplings for moulding equipment

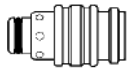


	code	hose I.D. [mm]	full flow DN [mm]	description
	TH-JL7086789	8	8	Plug with a straight hose tail without valve.
	TH-JL7086701	10	8	
	TH-JL7086712	12	8	
	TH-JL7126713	13	12	
	TH-JL7126716	16	12	

	code	hose I.D. [inch]	full flow DN [mm]	description
	TH-JL7086838	3/8	8	Plug with straight push-on type hose tail without valve.
	TH-JL7086812	1/2	8	


	code	hose I.D. [mm]	full flow DN [mm]	description
	TH-JL7088289	8	8	90° plug with hose tail without valve.
	TH-JL7088201	10	8	
	TH-JL7088212	12	8	


	code	hose I.D. [mm]	full flow DN [mm]	description
	TH-JL7088301	10	8	45° plug with hose tail without valve.
	TH-JL7088312	12	8	


	code	thread size	full flow DN [mm]	description
	TH-JL7086214	1/4"	8	Plug (straight) with female thread without valve.
	TH-JL7126212	1/2"	12	


## INDUSTRIAL FITTINGS - quick release couplings


### EUROSTANDARD 7.2 couplings for air


	code	hose I.D. [mm]	description  Socket with cut-off valve and hose tail. Material: brass. Full flow DN: 7.2 mm. Working press.: up to 35 bar.
	TP-ES72-GK-06	6	
	TP-ES72-GK-08	8	
	TP-ES72-GK-09	9	
	TP-ES72-GK-10	10	
	TP-ES72-GK-13	13	

	code	thread size [inch]	description  Socket with cut-off valve and female thread. Material: brass. Full flow DN: 7.2 mm. Working press.: up to 35 bar.
	TP-ES72-GW-04	1/4	
	TP-ES72-GW-06	3/8	
	TP-ES72-GW-08	1/2	

	code	thread size [inch]	description  Socket with cut-off valve and male thread. Material: brass. Full flow DN: 7.2 mm. Working press.: up to 35 bar.
	TP-ES72-GZ-04	1/4	
	TP-ES72-GZ-06	3/8	
	TP-ES72-GZ-08	1/2	

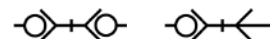
	code	hose I.D. [mm]	description  Plug with hose tail. Material: brass. Full flow DN: 7.2 mm. Working press.: up to 35 bar.
	TP-ES72-WK-06	6	
	TP-ES72-WK-08	8	
	TP-ES72-WK-09	9	
	TP-ES72-WK-10	10	
	TP-ES72-WK-13	13	

	code	thread size [inch]	description  Plug with female thread. Material: brass. Full flow DN: 7.2 mm. Working press.: up to 35 bar.
	TP-ES72-WW-02	1/8	
	TP-ES72-WW-04	1/4	
	TP-ES72-WW-06	3/8	
	TP-ES72-WW-08	1/2	

	code	thread size [inch]	description  Plug with male thread. Material: brass. Full flow DN: 7.2 mm. Working press.: up to 35 bar.
	TP-ES72-WZ-02	1/8	
	TP-ES72-WZ-04	1/4	
	TP-ES72-WZ-06	3/8	
	TP-ES72-WZ-08	1/2	

# INDUSTRIAL FITTINGS - quick release couplings


## EWO couplings





### EUROSTANDARD DN7.2

<b>Standard:</b>	Eurostandard DN7.2 ÷ 7.8
<b>Application:</b>	Pneumatics (air, nitrogen, other nonflammable gases)
<b>Working press.:</b>	16 bar (safety factor 1.5:1)
<b>Flow rate:</b>	1500 l/min, Pe = 6 bar, Δp = 1bar (single shut-off) 675 l/min, Pe = 6 bar, Δp = 1bar (double shut-off)
<b>Working temp.:</b>	From -10°C up to +90°C
<b>Material:</b>	Brass, pins and spring of stainless steel
<b>Seal:</b>	NBR
<b>Advantages:</b>	Inexpensive, popular

Quick release coupling with a popular plug design. Intended for one hand operation. A locking pin system enables fast and easy connection of a plug to a socket. Available as single shut-off or double shut-off couplings. The single shut-off version must not be connected to the double shut-off (the valve will not open). Optionally, the single shut-off plugs made of carbon steel can be also supplied. The quick release couplings are interchangeable with all couplings according to Eurostandard DN7.2 ÷ 7.8 of other producers.

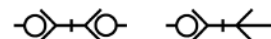
	code	hose I.D. [mm]	length [mm]	spanner size [mm]	description
	TP-ES72-GK-06X	6	57	21	
	TP-ES72-GK-08X	8	57	21	
	TP-ES72-GK-09X	9	57	21	
	TP-ES72-GK-10X	10	57	21	
	TP-ES72-GK-13X	13	57	21	


	code	thread size	length [mm]	spanner size [mm]	description
	TP-ES72-GW-02X	1/8" BSP	41	21	
	TP-ES72-GW-04X	1/4" BSP	41	21	
	TP-ES72-GW-06X	3/8" BSP	41	21	
	TP-ES72-GW-08X	1/2" BSP	43	24	
	TP-ES72-GW-M14X	M14x1.5	43	21	
	TP-ES72-GW-M16X	M16x1.5	43	21	
	TP-ES72-GW-M18X	M18x1.5	43	21	


	code	thread size	length [mm]	spanner size [mm]	description
	TP-ES72-GZ-02X	1/8" BSP	41	21	
	TP-ES72-GZ-04X	1/4" BSP	41	21	
	TP-ES72-GZ-06X	3/8" BSP	42.5	21	
	TP-ES72-GZ-08X	1/2" BSP	45	24	
	TP-ES72-GZ-M14X	M14x1.5	41	21	
	TP-ES72-GZ-M16X	M16x1.5	41	21	
	TP-ES72-GZ-M18X	M18x1.5	41	21	


# INDUSTRIAL FITTINGS - quick release couplings


## EWO couplings - EUROSTANDARD DN7.2




	code (brass)	code (carbon steel)	hose I.D. [mm]	length [mm]	description
	TP-ES72-WK-04X	TP-ES72-WK-04X-ST	4	45	
	TP-ES72-WK-06X	TP-ES72-WK-06X-ST	6	45	
	TP-ES72-WK-08X	TP-ES72-WK-08X-ST	8	45	
	TP-ES72-WK-09X	TP-ES72-WK-09X-ST	9	45	
	TP-ES72-WK-10X	TP-ES72-WK-10X-ST	10	45	
	TP-ES72-WK-13X	TP-ES72-WK-13X-ST	13	45	

	code (brass)	code (carbon steel)	thread size [inch]	length [mm]	description
	TP-ES72-WW-02X	-	1/8	30	
	TP-ES72-WW-04X	TP-ES72-WW-04X-ST	1/4	33	
	TP-ES72-WW-06X	TP-ES72-WW-06X-ST	3/8	33	
	TP-ES72-WW-08X	TP-ES72-WW-08X-ST	1/2	33	

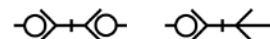
	code (brass)	code (carbon steel)	thread size [inch]	length [mm]	description
	TP-ES72-WZ-02X	-	1/8	31	
	TP-ES72-WZ-04X	TP-ES72-WZ-04X-ST	1/4	33	
	TP-ES72-WZ-06X	TP-ES72-WZ-06X-ST	3/8	33	
	TP-ES72-WZ-08X	TP-ES72-WZ-08X-ST	1/2	35	


	code	hose I.D. [mm]	length [mm]	spanner size [mm]	description
	TP-ES72D-GK-06X	6	57	21	
	TP-ES72D-GK-08X	8	57	21	
	TP-ES72D-GK-09X	9	57	21	
	TP-ES72D-GK-10X	10	57	21	
	TP-ES72D-GK-13X	13	57	21	


	code	thread size	length [mm]	spanner size [mm]	description
	TP-ES72D-GW-02X	1/8"	41	21	
	TP-ES72D-GW-04X	1/4"	41	21	
	TP-ES72D-GW-06X	3/8"	41	21	
	TP-ES72D-GW-08X	1/2"	43	24	
	TP-ES72D-GW-M14X	M14x1.5	43	21	
	TP-ES72D-GW-M16X	M16x1.5	43	21	
	TP-ES72D-GW-M18X	M18x1.5	43	21	


# INDUSTRIAL FITTINGS - quick release couplings


## EWO couplings - EUROSTANDARD DN7.2



	code	thread size	length [mm]	spanner size [mm]	description
	TP-ES72D-GZ-02X	1/8"	41	21	Double shut-off socket with male thread.
	TP-ES72D-GZ-04X	1/4"	41	21	
	TP-ES72D-GZ-06X	3/8"	41	21	
	TP-ES72D-GZ-08X	1/2"	45	24	
	TP-ES72D-GZ-M14X	M14x1.5	41	21	
	TP-ES72D-GZ-M16X	M16x1.5	41	21	
	TP-ES72D-GZ-M18X	M18x1.5	41	21	

	code	hose I.D. [mm]	length [mm]	spanner size [mm]	description
	TP-ES72D-WK-06X	6	59	21	Double shut-off plug with hose tail.
	TP-ES72D-WK-08X	8	59	21	
	TP-ES72D-WK-09X	9	59	21	
	TP-ES72D-WK-10X	10	59	21	
	TP-ES72D-WK-13X	13	59	21	

	code	thread size	length [mm]	spanner size [mm]	description
	TP-ES72D-WW-02X	1/8"	43	21	Double shut-off plug with female thread.
	TP-ES72D-WW-04X	1/4"	43	21	
	TP-ES72D-WW-06X	3/8"	44	21	
	TP-ES72D-WW-08X	1/2"	45	24	
	TP-ES72D-WW-M14X	M14x1.5	45	21	
	TP-ES72D-WW-M16X	M16x1.5	45	21	
	TP-ES72D-WW-M18X	M18x1.5	45	21	

	code	thread size	length [mm]	spanner size [mm]	description
	TP-ES72D-WZ-02X	1/8"	43	21	Double shut-off plug with male thread.
	TP-ES72D-WZ-04X	1/4"	43	21	
	TP-ES72D-WZ-06X	3/8"	43	21	
	TP-ES72D-WZ-08X	1/2"	44.5	21	
	TP-ES72D-WZ-M14X	M14x1.5	43	21	
	TP-ES72D-WZ-M16X	M16x1.5	43	21	
	TP-ES72D-WZ-M18X	M18x1.5	43	21	

## INDUSTRIAL FITTINGS - quick release couplings


### EWO couplings




#### EUROSTANDARD DN7.2

<b>Standard:</b>	Eurostandard DN7.2 ÷ 7.8
<b>Application:</b>	Pneumatics (air, nitrogen, other nonflammable gases)
<b>Working press.:</b>	10 bar - max. 25 bar (safety factor 1.5:1)
<b>Flow rate:</b>	1000 l/min, Pe = 6 bar, Δp = 1 bar
<b>Working temp.:</b>	From -20°C up to +80°C)
<b>Material:</b>	Nickel-plated steel
<b>Advantages:</b>	Swivel

Swivel plug with a design compliant with the popular EURO DN7.2 standard. A full 360° rotation axis prevents twisting of a hose connected to the plug and enables unrestricted operation of pneumatic tools. In addition, the plug can be positioned (by 30° maximum) and thus easily fitted in tight and inaccessible spaces. Connected to the plug, the hose assembly will not kink. German quality added to a steel plug body plated with nickel provides significantly longer service life compared to standard brass plugs. The couplings are suitable for operation with percussive tools (pneumatic torque wrenches, nail guns, etc.). Interchangeable with all couplings according to Eurostandard DN7.2 ÷ 7.8 of other producers.

	code	thread size [inch]	length [mm]	description
	EW-308-453	1/4	54.7	
	EW-308-454	3/8	54.7	
	EW-308-457	1/2	56.7	

	code	thread size [inch]	length [mm]	description
	EW-308-455	1/4	54.7	
	EW-308-456	3/8	54.7	
	EW-308-458	1/2	56.7	

# INDUSTRIAL FITTINGS - quick release couplings

## EWO couplings - EUROSTANDARD - no pressure disconnection




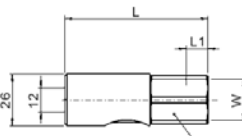
### EW-411 SAFETY DN7.4


**Flow rate:** 1800 l/min at entrance pressure  
 $P_e = 6 \text{ bar}$  ( $\Delta p = 1 \text{ bar}$ , air)  
**Working press:** 12 bar  
**Working temp.:** From -10°C up to +90°C

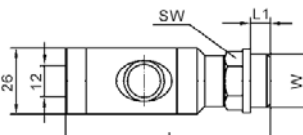
**Material:** Socket body: outlet - zinc-plated steel, housing - anodized aluminium, inlet - nickel-plated brass. Springs and balls - stainless steel. Plug - zinc-plated steel.

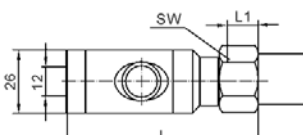
**Description:** Single shut-off quick release coupling for air installations, disconnected without pressure, equipped with a button locking system. The coupling is first vented and then the plug is disconnected so the whip effect is eliminated. The solution ensures safety of the operator according to ISO 4414 and EN983 standards. The way it works is simple: when the button is pressed first time, the coupling is vented but the plug is still secured. When the button is pushed second time, the plug is unlocked and can be safely removed. A threaded, swivel socket version allows to place the button in the most handy position after fixing the coupling in an installation. The construction of the plug is compliant with popular EURO DN7.2 standard. The plugs made of steel are recommender for this coupling (not brass).

Socket with male thread 	code	thread size	SW [mm]	L [mm]	L1 [mm]
	EW-411-001	1/4"	20	68.5	8
	EW-411-021	3/8"	20	69.5	9
	EW-411-041	1/2"	24	69.5	10

Socket with female thread 	code	thread size	SW [mm]	L [mm]	L1 [mm]
	EW-411-002	1/4"	20	68	10
	EW-411-022	3/8"	20	72.5	11
	EW-411-042	1/2"	24	73	11

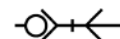
Socket with hose tai 	code	hose I.D.	SW [mm]	L [mm]	L1 [mm]
	EW-411-023	6 mm	20	85.5	25
	EW-411-026	8 mm	20	85.5	25
	EW-411-024	9 mm	20	85.5	25
	EW-411-027	10 mm	20	85.5	25
	EW-411-025	13 mm	20	85.5	25

Swivel socket with male thread 	code	thread size	SW [mm]	L [mm]	L1 [mm]
	EW-411-201	1/4"	20	76	6
	EW-411-221	3/8"	20	76	7
	EW-411-241	1/2"	20	81	8

Swivel socket with female thread 	code	thread size	SW [mm]	L [mm]	L1 [mm]
	EW-411-202	1/4"	20	75	12
	EW-411-222	3/8"	20	77	12
	EW-411-242	1/2"	24	79	13

# INDUSTRIAL FITTINGS - quick release couplings


## EWO couplings





### EUROSTANDARD MINI DN5


**Standard:** Eurostandard DN5  
**Application:** Pneumatics  
 (air, nitrogen, other nonflammable gases)  
**Working press.:** 16 bar (safety factor 1.5:1)  
**Flow rate:** 500 l/min, Pe = 6 bar, Δp = 1bar  
**Working temp.:** From -20°C up to +90°C  
**Material:** Nickel-plated brass, pins and spring of stainless steel  
**Seal:** NBR  
**Advantages:** Inexpensive, popular, small size


Single shut-off MINI quick release coupling has a plug design compliant with the popular EURO DN5 standard. Widely used in industry for applications demanding small dimensions, excellent flow rate and low pressure drop. Designed for one hand operation. Interchangeable with RECTUS 21 and other couplings with the same design, compliant with EURO DN5 standard, of other producers.


	code	hose I.D. [mm]	length [mm]	spanner size [mm]	description
	TP-ES5-GK-04	4	46	14	
	TP-ES5-GK-06	6	46	14	

	code	thread size [inch]	length [mm]	spanner size [mm]	description
	TP-ES5-GZ-02	1/8	36	14	
	TP-ES5-GZ-04	1/4	36	17	

	code	thread size [inch]	length [mm]	spanner size [mm]	description
	TP-ES5-GW-02	1/8	37	14	
	TP-ES5-GW-04	1/4	38	17	

	code	hose I.D. [mm]	length [mm]	spanner size [mm]	description
	TP-ES5-WK-04	4	33	-	
	TP-ES5-WK-06	6	33	-	

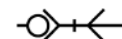
	code	thread size [inch]	length [mm]	spanner size [mm]	description
	TP-ES5-WZ-02	1/8	28	14	
	TP-ES5-WZ-04	1/4	28	17	

	code	thread size [inch]	length [mm]	spanner size [mm]	description
	TP-ES5-WW-02	1/8	25	14	
	TP-ES5-WW-04	1/4	26	17	



# INDUSTRIAL FITTINGS - quick release couplings

## EWO couplings



### MIKRO DN2.7

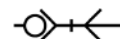
**Standard:** GLOBAL DN2.7  
**Application:** Pneumatics  
 (air, nitrogen, other nonflammable gases)  
**Working press.:** 16 bar (safety factor 1.5:1)  
**Flow rate:** 210 l/min, Pe = 6 bar, Δp = 1bar  
**Working temp.:** From -20°C up to +100°C)  
**Material:** Nickel-plated brass, pins and spring of SS  
**Seal:** NBR  
**Advantages:** Small size

Single shut-off MICRO quick release coupling is widely used for applications demanding small dimensions e.g. in medical, laboratory or measuring technology. Designed for one hand operation. Interchangeable with RECTUS 20 and all DN2.7 quick release couplings of other producers with the same plug design.

	code	hose I.D. [mm]	length [mm]	spanner size [mm]	description
	EW-MIKRO-GK-03	3	35	-	Socket with hose tail.
	EW-MIKRO-GK-04	4	35	-	
	code	hose O.D. x I.D. [mm]	length [mm]	spanner size [mm]	description
	EW-MIKRO-GK-4x3	4x3	34	9	Socket with plastic hose tail.
	EW-MIKRO-GK-5x3	5x3	34	9	
	EW-MIKRO-GK-6x4	6x4	34	9	
	code	thread size	length [mm]	spanner size [mm]	description
	EW-MIKRO-GZ-M5	M5	26	9	Socket with male thread.
	EW-MIKRO-GZ-02	1/8"	28	11	
	code	thread size	length [mm]	spanner size [mm]	description
	EW-MIKRO-GW-M5	M5	25	9	Socket with female thread.
	EW-MIKRO-GW-02	1/8"	28	12	
	code	hose I.D. [mm]	length [mm]	spanner size [mm]	description
	EW-MIKRO-WK-03	3	25	-	Plug with hose tail.
	EW-MIKRO-WK-04	4	25	-	
	code	hose O.D. x I.D. [mm]	length [mm]	spanner size [mm]	description
	EW-MIKRO-WK-4x3	4x3	25	7	Plug with plastic hose tail.
	EW-MIKRO-WK-5x3	5x3	25	7	
	EW-MIKRO-WK-6x4	6x4	24	-	
	code	thread size	length [mm]	spanner size [mm]	description
	EW-MIKRO-WZ-M5	M5	18	7	Plug with male thread.
	EW-MIKRO-WZ-02	1/8"	20	11	
	code	thread size	length [mm]	spanner size [mm]	description
	EW-MIKRO-WW-M5	M5	17	7	Plug with female thread.
	EW-MIKRO-WW-02	1/8"	18	12	

# INDUSTRIAL FITTINGS - quick release couplings

## RECTUS couplings



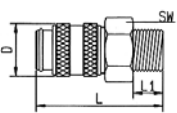
### 02KA series DN1.5

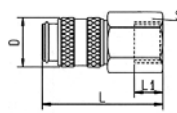
**Flow rate:** 105 l/min at entrance pressure  
 $P_e = 6 \text{ bar}$  ( $\Delta p = 0.5 \text{ bar}$ , air)  
**Working press.:** 35 bar  
**Working temp.:** NBR: from  $-20^\circ\text{C}$  up to  $+100^\circ\text{C}$   
 EPDM: from  $-40^\circ\text{C}$  up to  $+120/150^\circ\text{C}$   
 Viton: from  $-15^\circ\text{C}$  up to  $+200^\circ\text{C}$   
 (depending on the medium)

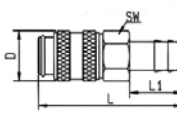
**Material:** As a standard both the threaded part and socket body are made of brass. The ferrule, plug and valve are made of brass as well. The spring and locking ring are made of AISI 301 steel, balls of AISI 420 steel and sealing of NBR.

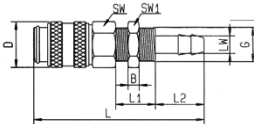
**Description:** The smallest coupling for one hand operation. High flow efficiency at low pressure drop. Used for gas and air transfer. Suitable for liquid media transfer as well.

**Application:** Medical, measuring and regulating technology, laboratories, textile machines, training systems, chemistry, lubrication systems, analysers, robots, pneumatic tools, blood pressure measuring devices, dental surgery equipment.

Socket with male thread 	code	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	RE-02KAAM03MPX	M3	6	19	6.5	3
	RE-02KAAM03MPN	M3	6	19	6.5	3

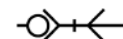
Socket with female thread 	code	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	RE-02KAIM03MPX	M3	6	19	6.5	3
	RE-02KAIM03MPN	M3	6	19	6.5	3

Socket with hose tail 	code	hose I.D. [mm]	SW [mm]	L [mm]	D [mm]	L1 [mm]
	RE-02KATF02MPX	2	6	21	6.5	5.5
	RE-02KATF02MPN	2	6	21	6.5	5.5
	RE-02KATF03MPX	3	6	22	6.5	6.5
	RE-02KATF03MPN	3	6	22	6.5	6.5

Socket with hose tail for panel mounting 	code	hose I.D. [mm]	SW [mm]	L [mm]	D [mm]	L1/L2 [mm]	G
	RE-02KATS02MPX	2	7	29	6.5	8/5.5	M5
	RE-02KATS02MPN	2	7	29	6.5	8/5.5	M5
	RE-02KATS03MPX	3	7	30	6.5	8/6.5	M5
	RE-02KATS03MPN	3	7	30	6.5	8/6.5	M5

# INDUSTRIAL FITTINGS - quick release couplings

## RECTUS couplings



<b>Plug with hose tail</b> 	code	hose I.D. [mm]	L [mm]	D [mm]	L 1 [mm]	L 2 [mm]
	RE-02SFTF02MXX	2	12	4	5	5.5
	RE-02SFTF02MXN	2	12	4	5	5.5
	RE-02SFTF03MXX	3	13	5	5	6.5
	RE-02SFTF03MXN	3	13	5	5	6.5

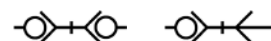
<b>Plug with hose tail for panel mounting</b> 	code	hose I.D. [mm]	SW [mm]	L [mm]	L1 [mm]	L2/L3 [mm]	G
	RE-02SFTS02MXX	2	7	21.5	5	8/5.5	M5
	RE-02SFTS02MXN	2	7	21.5	5	8/5.5	M5
	RE-02SFTS03MXX	3	7	22.5	5	8/6.5	M5
	RE-02SFTS03MXN	3	7	22.5	5	8/6.5	M5

<b>Plug with male thread</b> 	code	thread size	SW [mm]	L [mm]	L1 [mm]	L2 [mm]
	RE-02SFAM03MXX	M3	6	11	5	3
	RE-02SFAM03MXN	M3	6	11	5	3

<b>Plug with female thread</b> 	code	thread size	SW [mm]	L [mm]	L1 [mm]	L2 [mm]
	RE-02SFIM03MXX	M3	6	10	5	3
	RE-02SFIM03MXN	M3	6	10	5	3

# INDUSTRIAL FITTINGS - quick release couplings

## RECTUS couplings



### 20 series DN2.7

**Flow rate:** 165 l/min at entrance pressure  
Pe = 6 bar ( $\Delta p = 0.5$  bar, air)

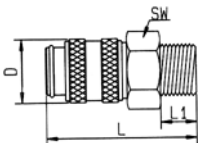
**Working press.:** 35 bar

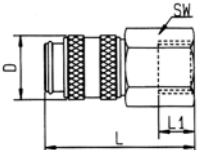
**Working temp.:** NBR: from -20°C up to +100°C  
EPDM: from -40°C up to +120°C  
Viton: from -15°C up to +200°C  
(depending on the medium)

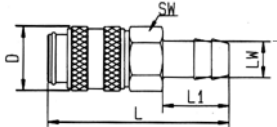
**Material:** As a standard the threaded part and the body of socket, ferrule, plug and valve are made of brass, springs of AISI 301 steel, balls of AISI 420 steel, sealing of NBR. Other materials are available on request (zinc-plated steel, AISI 303, AISI 316Ti, EPDM and Viton seal).

**Description:** High quality, very small couplings for one hand operation. High flow efficiency at low pressure drop. Available as single shut-off, double shut-off and straight-through version.

**Application:** Medical, measuring and regulating technology, laboratories, textile machines, chemistry, lubrication systems, analysers, robots, pneumatic tools, blood pressure measuring devices, dental surgery equipment.

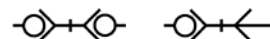
Socket with male thread 	code	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	single shut-off					
	RE-20KAAM05MPX	M5	9	26	10	5
	RE-20KAAW10MPX	1/8"	11	28	10	7
	double shut-off					
	RE-20KBAM05MPX	M5	9	26	10	5
	RE-20KBAW10MPX	1/8"	11	28	10	7

Socket with female thread 	code	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	single shut-off					
	RE-20KAIM05MPX	M5	9	26	10	5
	RE-20KAIW10MPX	1/8"	12	28	10	7
	double shut-off					
	RE-20KBIM05MPX	M5	9	26	10	5
	RE-20KBIW10MPX	1/8"	11	28	10	7

Socket with hose tail 	code	hose I.D. [mm]	SW [mm]	L [mm]	D [mm]	L1 [mm]
	single shut-off					
	RE-20KATF03MPX	3	9	35	10	13
	RE-20KATF04MPX	4	9	35	10	13
	RE-20KATF05MPX	5	9	35	10	13
	double shut-off					
	RE-20KBTf03MPX	3	9	35	10	13
	RE-20KBTf04MPX	4	9	35	10	13
	RE-20KBTf05MPX	5	9	35	10	13

# INDUSTRIAL FITTINGS - quick release couplings

## RECTUS couplings



<b>Plug with male thread</b> 	code	thread size	SW [mm]	L [mm]	L1 [mm]	L2 [mm]
	straight through					
	RE-20SFAM05MXX	M5	7	18	10	5
	RE-20SFAW10MXX	1/8"	11	20	10	7
	double shut-off					
	RE-20SBAM05MPX	M5	9	28	10	5
	RE-20SBAW10MPX	1/8"	11	30	10	7

<b>Plug with female thread</b> 	code	thread size	SW [mm]	L [mm]	L1 [mm]	L2 [mm]
	straight through					
	RE-20SFIM05MXX	M5	7	17	10	5
	RE-20SFIW10MXX	1/8"	12	19	10	7
	double shut-off					
	RE-20SBIM05MPX	M5	9	26.5	10	5
	RE-20SBIW10MPX	1/8"	12	30	10	7

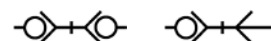
<b>Plug with hose tail</b> 	code	hose I.D. [mm]	L [mm]	D [mm]	L1 [mm]	L2 [mm]
	straight through					
	RE-20SFTF03MXX	3	24	7	10	13
	RE-20SFTF04MXX	4	24	7	10	13
	RE-20SFTF05MXX	5	24	9	8.5	12.5
	double shut-off					
	RE-20SBTF03MPX	3	36.5		10	13
	RE-20SBTF04MPX	4	36.5		10	13
	RE-20SBTF05MPX	5	36.5		10	13

<b>Socket with hose tail for panel mounting</b> 	code	hose I.D. [mm]	SW [mm]	L [mm]	L1 [mm]	L2 [mm]	G
	single shut-off						
	RE-20KATS03MPX	3	12	51	11	13	M7x0.5
	RE-20KATS04MPX	4	12	51	11	13	M7x0.5
	RE-20KATS06MPX	6	12	51	12	13	M10x1
	double shut-off						
	RE-20KBTS03MPX	3	12	51	11	13	M7x0.5
	RE-20KBTS04MPX	4	12	51	11	13	M7x0.5
	RE-20KBTS06MPX	6	12	51	12	13	M10x1

<b>Plug with hose tail for panel mounting</b> 	code	hose I.D. [mm]	SW [mm]	L [mm]	L1 [mm]	L2 [mm]	G
	straight through						
	RE-20SFTS03MXX	3	12	45	13	18	M7x0.5
	RE-20SFTS04MXX	4	12	45	13	17	M7x0.5
	double shut-off						
	RE-20SBTS03MPX	3	12	52.5	13	17	M7x0.5
	RE-20SBTS04MPX	4	12	52.5	13	17	M7x0.5
	RE-20SBTS06MPX	6	12	52.5	13	17	M10x1

# INDUSTRIAL FITTINGS - quick release couplings

## RECTUS couplings



### 21 series DN5

**Flow rate:** 560 l/min at entrance pressure  
Pe = 6 bar ( $\Delta p = 0.5$  bar, air)

**Working press.:** 35 bar

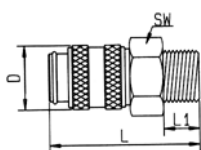
**Working temp.:** NBR: from -20°C up to +100°C  
EPDM: from -40°C up to +120°C  
Viton: from -15°C up to +200°C  
Kalrez: from 0°C up to +316°C  
(depending on the medium)

**Material:** As a standard the threaded part and the body of socket, ferrule, plug and valve are made of brass, springs and ring of AISI 301 steel, balls of AISI 420 steel, sealing of NBR. Other materials are available on request (zinc-plated steel, AISI 303, AISI 316Ti, EPDM, Kalrez and Viton seal).

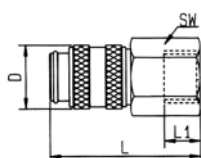
**Description:** A bigger version of 20 series, widely used in applications where space is of special importance. Available as single shut-off, double shut-off and straight-through version. High flow efficiency at low pressure drop.

**Application:** Small pneumatic tools, robots, pneumatic systems, industrial sewing machines, packaging production, medical technology, breathing equipment, diving equipment, measuring technology, cooling of welding equipment, portable gas heaters, analysers, dosing devices.

Socket with male thread	code	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	single shut-off					
	RE-21KAAW10MPX	1/8"	14	36	16	7
	RE-21KAAW13MPX	1/4"	17	38	16	9
	RE-21KAAW17MPX	3/8"	19	38	16	9
	double shut-off					
	RE-21KBAW10MPX	1/8"	14	36	16	7
	RE-21KBAW13MPX	1/4"	17	38	16	9
	RE-21KBAW17MPX	3/8"	19	38	16	9

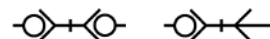


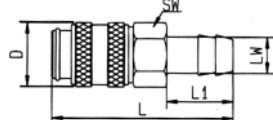
Socket with female thread	code	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	single shut-off					
	RE-21KAIW10MPX	1/8"	14	36	16	9
	RE-21KAIW13MPX	1/4"	17	38	16	9
	RE-21KAIW17MPX	3/8"	19	38	16	7
	double shut-off					
	RE-21KBIW10MPX	1/8"	14	36	16	9
	RE-21KBIW13MPX	1/4"	17	38	16	7
	RE-21KBIW17MPX	3/8"	19	38	16	7

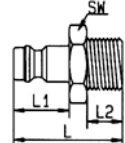


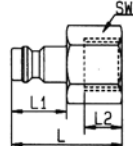
# INDUSTRIAL FITTINGS - quick release couplings

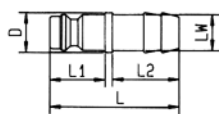
## RECTUS couplings



<div>Socket with hose tail</div> 	code	hose I.D. [mm]	SW [mm]	L [mm]	D [mm]	L1 [mm]
	single shut-off					
	RE-21KATF04MPX	4	14	46	16	17
	RE-21KATF06MPX	6	14	46	16	17
	RE-21KATF08MPX	8	14	46	16	17
	RE-21KATF09MPX	9	14	46	16	17
	RE-21KATF10MPX	10	14	46	16	17
	double shut-off					
	RE-21KBTF04MPX	4	14	46	16	17
	RE-21KBTF06MPX	6	14	46	16	17
	RE-21KBTF08MPX	8	14	46	16	17
	RE-21KBTF09MPX	9	14	46	16	17
	RE-21KBTF10MPX	10	14	46	16	17

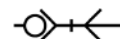
<div>Plug with male thread</div> 	code	thread size	SW [mm]	L [mm]	L1 [mm]	L2 [mm]
	straight through					
	RE-21SFAW10MXX	1/8"	14	25	14	7
	RE-21SFAW13MXX	1/4"	17	28	14	9
	RE-21SFAW17MXX	3/8"	19	28	14	9
	double shut-off					
	RE-21SBAW10MPX	1/8"	14	40	14	7
	RE-21SBAW13MPX	1/4"	17	42	14	9
	RE-21SBAW17MPX	3/8"	19	42	14	9

<div>Plug with female thread</div> 	code	thread size	SW [mm]	L [mm]	L1 [mm]	L2 [mm]
	straight through					
	RE-21SFIW10MXX	1/8"	14	25	14	8
	RE-21SFIW13MXX	1/4"	17	26	14	9
	RE-21SFIW17MXX	3/8"	19	27	14	9
	double shut-off					
	RE-21SBIW10MPX	1/8"	14	40	14	8
	RE-21SBIW13MPX	1/4"	17	42	14	9
	RE-21SBIW17MPX	3/8"	19	42	14	9

<div>Plug with hose tail</div> 	code	hose I.D. [mm]	SW [mm]	L [mm]	D [mm]	L1 [mm]	L2 [mm]
	straight through						
	RE-21SFTF04MXX	4		32	9	14	17
	RE-21SFTF05MXX	5		32	9	14	17
	RE-21SFTF06MXX	6		32	9	14	17
	RE-21SFTF08MXX	8		32	9	14	17
	RE-21SFTF09MXX	9		33	10	14	17
	RE-21SFTF10MXX	10		33	12	14	17
	double shut-off						
	RE-21SBTF04MPX	4	14	50		14	17
	RE-21SBTF05MPX	5	14	50		14	17
	RE-21SBTF06MPX	6	14	50		14	17
	RE-21SBTF08MPX	8	14	50		14	17
	RE-21SBTF09MPX	9	14	50		14	17
	RE-21SBTF10MPX	10	14	50		14	17

# INDUSTRIAL FITTINGS - quick release couplings

## RECTUS couplings



### 1400KA series DN5.5 1423KA series DN5.5

**Flow rate:** 940 l/min at entrance pressure  
Pe = 6 bar ( $\Delta p = 0.5$  bar, air)

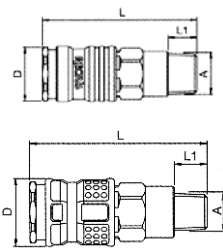
**Working press.:** 35 bar

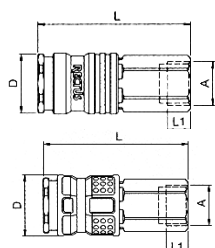
**Working temp.:** NBR: from -20°C up to +100°C  
EPDM: from -40°C up to +120/150°C  
Viton: from -15°C up to +200°C  
(depending on the medium)  
1423KA type from -20°C up to +80°C  
with any sealing type

**Material:** The body of socket is made of QPQ treated steel, connection and ferrule of nickel-plated brass, plug of brass or nickel-plated hardened steel, spring of AISI 301 steel, balls and ring of AISI 420 steel, sealing of NBR. Sockets of 1423KA series have particularly robust, impact resistant, ergonomic, plastic ferrule.

**Description:** The highest quality quick release coupling with a top grade valve for optimum flow performance. Its design conforms to ISO 6150B (MIL C-4109). For one hand operation with minimum coupling force.

**Application:** Varied industrial applications for compressed air, fluids and gases.

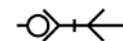
Socket with male thread 	code	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	RE-1400KAAK13SPN	1/4"	19	65	23	12
	RE-1400KAAK17SPN	3/8"	19	65	23	12
	RE-1400KAAK21SPN	1/2"	22	59.5	23	17
	RE-1423KAAK13SPN	1/4"	19	65	26	12
	RE-1423KAAK17SPN	3/8"	19	65	26	12
	RE-1423KAAK21SPN	1/2"	22	59.5	26	17

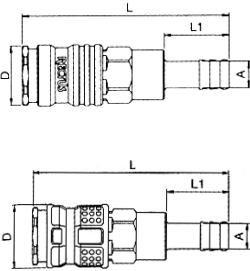
Socket with female thread 	code	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	RE-1400KAIW13SPN	1/4"	19	59	23	9
	RE-1400KAIW17SPN	3/8"	19	59	26	9
	RE-1400KAIW21SPN	1/2"	24	62	26	12
	RE-1423KAIW13SPN	1/4"	19	59	26	9
	RE-1423KAIW17SPN	3/8"	19	59	26	9
	RE-1423KAIW21SPN	1/2"	24	62	26	12

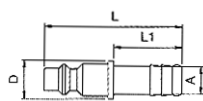


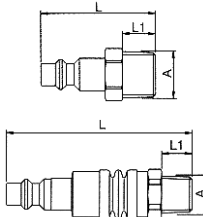
# INDUSTRIAL FITTINGS - quick release couplings

## RECTUS couplings

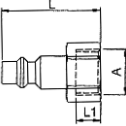


<b>Socket with hose tail</b>  	code	hose I.D. [mm]	SW [mm]	L [mm]	D [mm]	L1 [mm]
	RE-1400KATF06SPN	6	19	80	23	25
	RE-1400KATF08SPN	8	19	80	23	25
	RE-1400KATF09SPN	9	19	80	23	25
	RE-1400KATF10SPN	10	19	80	23	25
	RE-1400KATF13SPN	13	19	80	23	25
	RE-1423KATF06SPN	6	19	80	26	25
	RE-1423KATF08SPN	8	19	80	26	25
	RE-1423KATF09SPN	9	19	80	26	25
	RE-1423KATF10SPN	10	19	80	26	25
	RE-1423KATF13SPN	13	19	80	26	25

<b>Plug with hose tail</b>  	code	hose I.D. [mm]	L [mm]	D [mm]	L1 [mm]
	RE-23SFTF04MXN	4	51	14	25
	RE-23SFTF06SXN	6			
	RE-23SFTF06MXX	6			
	RE-23SFTF08SXN	8			
	RE-23SFTF08MXX	8			
	RE-23SFTF09SXN	9			
	RE-23SFTF09MXX	9			
	RE-23SFTF10SXN	10			
	RE-23SFTF10MXX	10			
	RE-23SFTF13SXN	13			

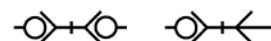
<b>Plug with male thread</b>  	code	thread size	SW [mm]	L [mm]	L1 [mm]
	RE-23SFAK10SXN	1/8"	13	39	9
	RE-23SFAK13SXN	1/4"	14	42	12
	RE-23SFAW13MXX				
	RE-23SFAK17SXN	3/8"	17	48	17
	RE-23SFAW17MXX				
	RE-23SFAK21SXN	1/2"	22	48	17
	RE-23SFAAK13SPN*	1/4"	17	68	11

\* - flex joint

<div>Plug with female thread</div> <div></div>	code	thread size	SW [mm]	L [mm]	L1 [mm]
	RE-23SFIW10SXN	1/8"	14	36	9
	RE-23SFIW13SXN	1/4"	17		
	RE-23SFIW13MXX	1/4"			
	RE-23SFIW17SXN	3/8"	19		
	RE-23SFIW17MXX	3/8"			
	RE-23SFIW21SXN	1/2"	24	39	12

# INDUSTRIAL FITTINGS - quick release couplings

## RECTUS couplings



### 26 series DN7.2

**Flow rate:** 1000 l/min at entrance pressure  
Pe = 6 bar ( $\Delta p = 0.5$  bar, air)

**Working press.:** 35 bar

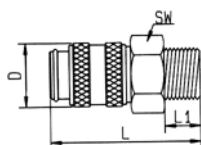
**Working temp.:** NBR: from -20°C up to +100°C  
EPDM: from -40°C up to +120°C  
Viton: from -15°C up to +200°C  
(depending on the medium)

**Material:** As a standard the threaded part and the body of a coupling, ferrule, plug and valve are made of brass, spring and ring of AISI 301 steel, locking pins of AISI 420 steel, sealing of NBR.

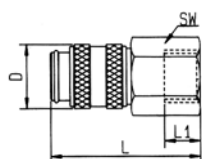
**Description:** Inexpensive, general purpose quick release coupling. The tight surface body of the coupling protects inner parts against dirt. Locking pins made of hardened steel are compatible with other tools equipped with plugs made of steel.

**Application:** Varied industry and craft application.

Socket with male thread	code	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	single shut-off					
	RE-26KAAW10MPX	1/8"	22	43	25	9
	RE-26KAAW13MPX	1/4"	22	39	25	9
	RE-26KAAW17MPX	3/8"	22	41	25	9
	RE-26KAAW21MPX	1/2"	22	44	25	12
	double shut-off					
	RE-26KBAW10MPX	1/8"	22	43	25	9
	RE-26KBAW13MPX	1/4"	22	39	25	9
	RE-26KBAW17MPX	3/8"	22	41	25	9
	RE-26KBAW21MPX	1/2"	24	42	25	10

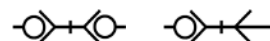


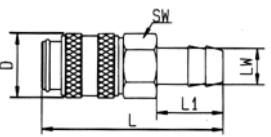
Socket with female thread	code	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	single shut-off					
	RE-26KAIW13MPX	1/4"	22	41	25	9
	RE-26KAIW17MPX	3/8"	22	41	25	9
	RE-26KAIW21MPX	1/2"	24	44	25	10
	double shut-off					
	RE-26KBIW13MPX	1/4"	22	41	25	9
	RE-26KBIW17MPX	3/8"	22	41	25	9
	RE-26KBIW21MPX	1/2"	24	44	25	10

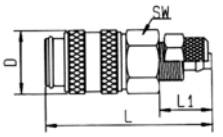


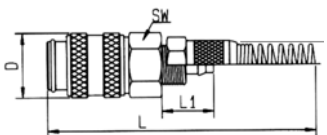
# INDUSTRIAL FITTINGS - quick release couplings

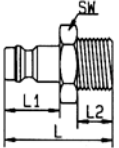
## RECTUS couplings



<b>Socket with hose tail</b>  	code	hose I.D. [mm]	SW [mm]	L [mm]	D [mm]	L1 [mm]
	single shut-off					
	RE-26KATF06MPX	6	21	58	25	25
	RE-26KATF08MPX	8	21	58	25	25
	RE-26KATF09MPX	9	21	58	25	25
	RE-26KATF10MPX	10	21	58	25	25
	RE-26KATF13MPX	13	21	58	25	25
	double shut-off					
	RE-26KBTF06MPX	6	21	58	25	25
	RE-26KBTF08MPX	8	21	58	25	25
	RE-26KBTF09MPX	9	21	58	25	25
	RE-26KBTF10MPX	10	21	58	25	25
	RE-26KBTF13MPX	13	21	58	25	25

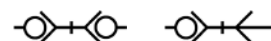
<b>Socket with crimp ferrule</b>  	code	hose I.D. x O.D. [mm]	SW [mm]	L [mm]	D [mm]	L1 [mm]
	single shut-off					
	RE-26KAKO06MPX	4x6	21	58	25	13
	RE-26KAKO08MPX	6x8	21	45	25	13
	RE-26KAKO10MPX	8x10	21	49	25	17
	RE-26KAKO12MPX	9x12	21	49	25	17
	double shut-off					
	RE-26KBKO08MPX	6x8	21	45	25	13
	RE-26KBKO10MPX	8x10	21	49	25	17
	RE-26KBKO12MPX	9x12	21	49	25	17

<b>Socket for plastic hose</b>  	code	hose I.D. x O.D. [mm]	SW [mm]	L [mm]	D [mm]	L1 [mm]
	single shut-off					
	RE-26KAKK08MPX	6x8	21	132	25	13
	RE-26KAKK10MPX	8x10	21	143	25	17
	RE-26KAKK12MPX	9x12	21	150	27	17
	double shut-off					
	RE-26KBKK08MPX	6x8	21	132	25	13
	RE-26KBKK10MPX	8x10	21	143	25	17
	RE-26KBKK12MPX	9x12	21	150	25	17

<b>Plug with male thread</b>  	code	thread size	SW [mm]	L [mm]	L1 [mm]	L2 [mm]
	straight through					
	RE-26SFAW10MXX	1/8"	14	31	20	7
	RE-26SFAW13MXX	1/4"	17	33	20	9
	RE-26SFAW17MXX	3/8"	19	33	20	9
	RE-26SFAW21MXX	1/2"	24	38	20	12

# INDUSTRIAL FITTINGS - quick release couplings

## RECTUS couplings



<b>Plug with female thread</b> 	code	thread size	SW [mm]	L [mm]	L1 [mm]	L2 [mm]
	straight through					
	RE-26SFIW10MXX	1/8"	14	30	20	7
	RE-26SFIW13MXX	1/4"	17	33	20	10
	RE-26SFIW17MXX	3/8"	19	33	20	10
	RE-26SFIW21MXX	1/2"	24	38	20	12

<b>Plug with hose tail</b> 	code	hose I.D. [mm]	SW [mm]	L [mm]	D [mm]	L1 [mm]	L2 [mm]
	straight through						
	RE-26SFTF04MXX	4	-	48	12	20	25
	RE-26SFTF06MXX	6	-	48	12	20	25
	RE-26SFTF08MXX	8	-	48	12	20	25
	RE-26SFTF09MXX	9	-	48	12	20	25
	RE-26SFTF10MXX	10	-	48	12	20	25
	RE-26SFTF13MXX	13	-	48	15	20	25

<b>Plug for plastic hose</b> 	code	hose I.D. x O.D. [mm]	SW [mm]	L [mm]	L1 [mm]	L2 [mm]
	straight through					
	RE-26SFKO06MXX	4x6	-	34	20	13
	RE-26SFKO08MXX	6x8	-	34	20	15
	RE-26SFKO10MXX	8x10	17	42	20	17
	RE-26SFKO12MXX	9x12	17	42	20	17

<b>Plug for plastic hose with spring guard</b> 	code	hose I.D. x O.D. [mm]	SW [mm]	L [mm]	L1 [mm]	L2 [mm]
	straight through					
	RE-26SFKK06MXX	4x6	-	120	20	13
	RE-26SFKK08MXX	6x8	-	127	20	13
	RE-26SFKK10MXX	8x10	17	135	20	17
	RE-26SFKK12MXX	9x12	17	142	20	17

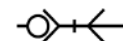
<b>Plug with recoil eliminator and hose tail</b> 	code	hose I.D. [mm]	SW [mm]	L [mm]	L1 [mm]	L2 [mm]
	RE-26SRTF06MXX	6	21	67	20	25
	RE-26SRTF08MXX	8	21	67	20	25
	RE-26SRTF09MXX	9	21	67	20	25
	RE-26SRTF10MXX	10	21	67	20	25
	RE-26SRTF13MXX	13	21	67	20	25

Attention!

- steel plugs - see type 25
- plugs with valves for double shut-off version - see type 25

# INDUSTRIAL FITTINGS - quick release couplings

## RECTUS couplings - self-venting system



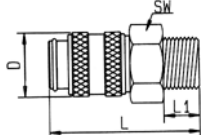
### 26KE series DN7.4

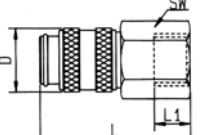
**Flow rate:** 1430 l/min at entrance pressure  
Pe = 6 bar ( $\Delta p = 0.5$  bar, air)

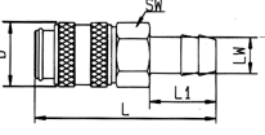
**Working press.:** 12 bar

**Working temp.:** From -20°C up to +60°C (NBR)

- Material:** Both the threaded part and the body of socket are made of brass, locking ferrule is made of thermoplastic material, valve of brass, spring of AISI 301 steel, locking pins and balls of AISI 420 steel, plug of hardened zinc-plated steel, sealing of NBR.
- Connection:** The couplings connect the same way as 25 series, by pushing the plug into the socket. The ferrule moves forward during this process and the plug is sealed and locked.
- Venting:** When the ferrule is pulled back, the first locking system is released. The valve of the coupling closes. Simultaneously the plug is pulled back and interlocked by the spring and air pressure in the second locking system. Then the compressed air freely escapes outside.
- Disconnection:** Once the pressure drops in the coupling, the ferrule can be pulled back which causes the release of the second locking system. The connection can now be safely undone because there is pressure neither in the hose nor in the plug.
- Remarks:** Not recommended for direct connection to pneumatic tools, because vibration and oscillation shorten service life of the coupling.  
Safe operation of the coupling is only possible when it is connected to plugs made of hardened steel (check 25 series).

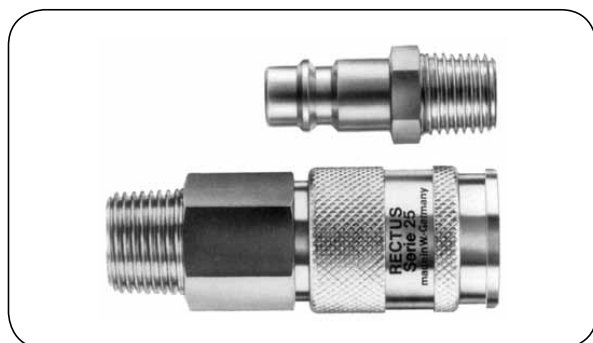
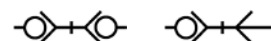
Socket with male thread 	code	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	self-venting system					
	RE-26KEAW13MPN	1/4"	22	55	31	9
	RE-26KEAW17MPN	3/8"	22	55	31	9
	RE-26KEAW21MPN	1/2"	24	58	31	12

Socket with female thread 	code	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	self-venting system					
	RE-26KEIW13MPN	1/4"	22	57	31	9
	RE-26KEIW17MPN	3/8"	22	57	31	9
	RE-26KEIW21MPN	1/2"	24	60	31	12

Socket with hose tail 	code	hose I.D. [mm]	SW [mm]	L [mm]	D [mm]	L1 [mm]
	self-venting system					
	RE-26KETF06MPN	6	22	71	31	25
	RE-26KETF08MPN	8	22	71	31	25
	RE-26KETF09MPN	9	22	71	31	25
	RE-26KETF10MPN	10	22	71	31	25
	RE-26KETF13MPN	13	22	71	31	25

# INDUSTRIAL FITTINGS - quick release couplings

## RECTUS couplings



### 25 series DN7.8 DN7.4

**Flow rate:** 1800 l/min at entrance pressure  
Pe = 6 bar ( $\Delta p = 0.5$  bar, air)

**Working press.:** 35 bar

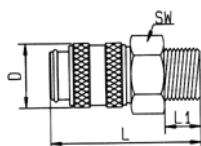
**Working temp.:** NBR: from -20°C up to +100°C  
EPDM: from -40°C up to +120/150°C  
Viton: from -15°C up to +200°C  
Kalrez: from 0°C up to +316°C  
(depending on the medium)

**Material:** As a standard both the threaded part and the body of a coupling are made of nickel-plated brass, locking ferrule and plug are made of hardened zinc-plated steel, valve of brass (KA) or nickel-plated cast iron (KB), spring and ring of AISI 301 steel, balls of AISI 420 steel, sealing of NBR. Other materials are available on request.

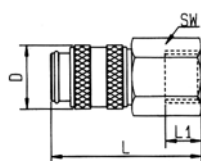
**Description:** Robust couplings providing excellent tightness and a very high flow rate due to ULTRA-FLO valve. For one hand operation.

**Application:** All branches of technology, industry and craft - for compressed air, fluids and gases.

Socket with male thread	code	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	single shut-off					
	RE-25KAAK13MPN	1/4"	19	60	23	12
	RE-25KAAK17MPN	3/8"	19	60	23	12
	RE-25KAAK21MPN	1/2"	22	61	23	17
	double shut-off					
	RE-25KBAK13BPX	1/4"	19	60	23	12
	RE-25KBAK17BPX	3/8"	19	59	23	10.5
	RE-25KBAK21BPX	1/2"	22	57.5	23	9

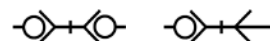


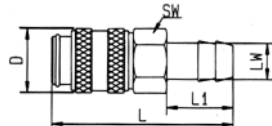
Socket with female thread	code	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	single shut-off					
	RE-25KAIW13MPN	1/4"	19	56	23	10
	RE-25KAIW17MPN	3/8"	19	55	23	9
	RE-25KAIW21MPN	1/2"	24	58	23	12
	double shut-off					
	RE-25KBIW13BPX	1/4"	19	56	23	10
	RE-25KBIW17BPX	3/8"	19	55	23	9
	RE-25KBIW21BPX	1/2"	24	58	23	12

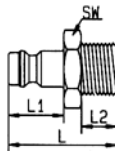


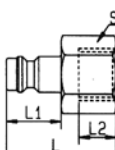
# INDUSTRIAL FITTINGS - quick release couplings

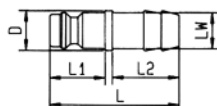
## RECTUS couplings



<div>Socket with hose tail</div> 	code	hose I.D. [mm]	SW [mm]	L [mm]	D [mm]	L1 [mm]
	single shut-off					
	RE-25KATF06MPN	6	19	74	23	25
	RE-25KATF08MPN	8	19	74	23	25
	RE-25KATF09MPN	9	19	74	23	25
	RE-25KATF10MPN	10	19	74	23	25
	RE-25KATF13MPN	13	19	74	23	25
	double shut-off					
	RE-25KBTf06BPX	6	19	74	23	25
	RE-25KBTf08BPX	8	19	74	23	25
	RE-25KBTf09BPX	9	19	74	23	25
	RE-25KBTf10BPX	10	19	74	23	25
	RE-25KBTf13BPX	13	19	74	23	25

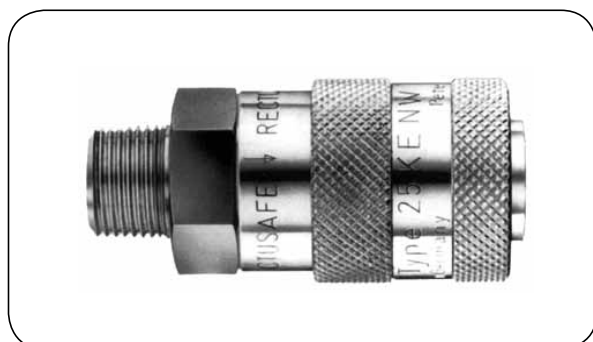
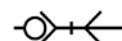
<div>Plug with male thread</div> 	code	thread size	SW [mm]	L [mm]	L1 [mm]	L2 [mm]
	straight through					
	RE-25SFAK10SXZ	1/8"	13	33	20	9
	RE-25SFAK13SXZ	1/4"	14	37	20	12
	RE-25SFAK17SXZ	3/8"	17	37	20	12
	RE-25SFAK21SXZ	1/2"	22	43	20	17
	double shut-off					
	RE-25SBAW10MPX	1/8"	22	41	20	9
	RE-25SBAW13MPX	1/4"	22	43	20	9
	RE-25SBAW17MPX	3/8"	22	43	20	9
	RE-25SBAW21MPX	1/2"	22	46	20	12

<div>Plug with female thread</div> 	code	thread size	SW [mm]	L [mm]	L1 [mm]	L2 [mm]
	straight through					
	RE-25SFIW10SXZ	1/8"	14	32	20	7
	RE-25SFIW13SXZ	1/4"	17	33	20	9
	RE-25SFIW17SXZ	3/8"	19	33	20	9
	RE-25SFIW21SXZ	1/2"	24	36	20	12
	double shut-off					
	RE-25SBIW13MPX	1/4"	22	43	20	10
	RE-25SBIW17MPX	3/8"	22	43	20	10
	RE-25SBIW21MPX	1/2"	24	46	20	12

<div>Plug with hose tail</div> 	code	hose I.D. [mm]	SW [mm]	L [mm]	D [mm]	L1 [mm]	L2 [mm]
	straight through						
	RE-25SFTF06SXZ	6		48	12	20	25
	RE-25SFTF08SXZ	8		48	12	20	25
	RE-25SFTF09SXZ	9		48	12	20	25
	RE-25SFTF10SXZ	10		48	12	20	25
	RE-25SFTF13SXZ	13		48	15	20	25
	double shut-off						
	RE-25SBTF06MPX	6	21	60		20	25
	RE-25SBTF08MPX	8	21	60		20	25
	RE-25SBTF09MPX	9	21	60		20	25
	RE-25SBTF10MPX	10	21	60		20	25
	RE-25SBTF13MPX	13	21	60		20	25

# INDUSTRIAL FITTINGS - quick release couplings

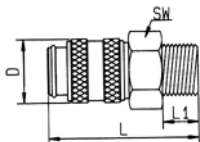
## RECTUS couplings - self-venting system

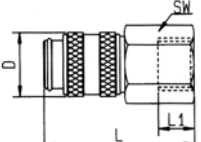


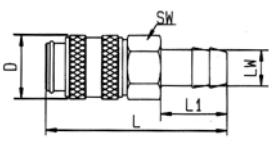
### 25KE series DN7.8

**Flow rate:** 1800 l/min at entrance pressure  
 $P_e = 6 \text{ bar}$  ( $\Delta p = 0.5 \text{ bar}$ , air)  
**Working press.:** 8 bar  
**Working temp.:** From  $-20^\circ\text{C}$  up to  $+60^\circ\text{C}$  (NBR)

- Material:** As a standard both the threaded part of a socket and the locking ferrule are made of brass, the body of a coupling is made of zinc-plated steel, valve of brass, spring of AISI 301 steel, locking pins and balls of AISI 420 steel, plug of hardened zinc-plated steel, sealing of NBR.
- Connection:** The couplings connect the same way as 25 series, by pushing the plug into the socket. The ferrule moves forward during this process and the plug is sealed and locked.
- Venting:** When the ferrule is pulled back, the first locking system is released. The valve of the coupling closes. Simultaneously the plug is pulled back and interlocked by the spring and air pressure in the second locking system. Then the compressed air freely escapes outside.
- Disconnection:** Once the pressure drops in the coupling, the ferrule can be pulled back, which causes the release of the second locking system. The connection can now be safely undone because there is pressure neither in the hose nor in the plug.
- Remarks:** Not recommended for direct connection to pneumatic tools, because vibration and oscillation shorten service life of the coupling.  
 Safe operation of the coupling is only possible when it is connected to plugs made of hardened steel (check 25 series).

Socket with male thread 	code	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	self-venting system					
	RE-25KEAK13SPN	1/4"	24	62	30	12
	RE-25KEAK17SPN	3/8"	24	62	30	12
	RE-25KEAK21SPN	1/2"	24	67	30	17

Socket with female thread 	code	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	self-venting system					
	RE-25KEIW13SPN	1/4"	24	59	30	10
	RE-25KEIW17SPN	3/8"	24	56	30	9
	RE-25KEIW21SPN	1/2"	24	61	30	10

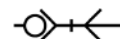
Socket with hose tail 	code	hose I.D. [mm]	SW [mm]	L [mm]	D [mm]	L1 [mm]
	self-venting system					
	RE-25KETF06SPN	6	24	76	30	25
	RE-25KETF08SPN	8	24	76	30	25
	RE-25KETF09SPN	9	24	76	30	25
	RE-25KETF10SPN	10	24	76	30	25
	RE-25KETF13SPN	13	24	76	30	25

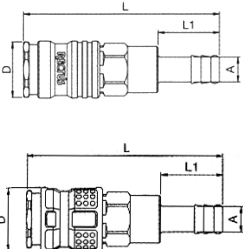


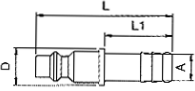


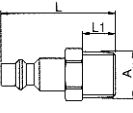
# INDUSTRIAL FITTINGS - quick release couplings

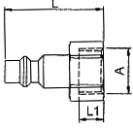
## RECTUS couplings



<b>Socket with hose tail</b>  	code	hose I.D. [mm]	SW [mm]	L [mm]	D [mm]	L1 [mm]
	RE-1600KATF06SPN	6	19	80	23	25
	RE-1600KATF08SPN	8				
	RE-1600KATF09SPN	9				
	RE-1600KATF10SPN	10				
	RE-1600KATF13SPN	13				
	RE-1625KATF06SPN	6	19	80	26	25
	RE-1625KATF08SPN	8				
	RE-1625KATF09SPN	9				
	RE-1625KATF10SPN	10				
	RE-1625KATF13SPN	13				

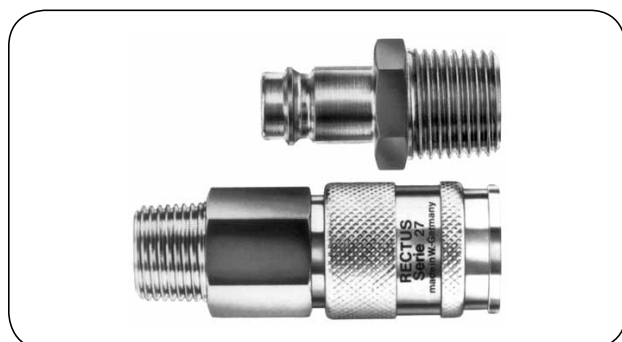
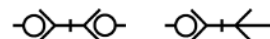
<b>Plug with hose tail</b>  	code	hose I.D. [mm]	L [mm]	D [mm]	L1 [mm]
	RE-25SFTF06SXZ	6	48	12	25
	RE-25SFTF08SXZ	8			
	RE-25SFTF09SXZ	9			
	RE-25SFTF10SXZ	10			
	RE-25SFTF13SXZ	13		15	

<b>Plug with male thread</b>  	code	thread size	SW [mm]	L [mm]	L1 [mm]
	RE-25SFAK10SXZ	1/8"	13	33	9
	RE-25SFAK13SXZ	1/4"	14	37	12
	RE-25SFAK17SXZ	3/8"	17		
	RE-25SFAK21SXZ	1/2"	22	43	17

<b>Plug with female thread</b>  	code	thread size	SW [mm]	L [mm]	L1 [mm]
	RE-25SFIW10SXZ	1/8"	14	30	7
	RE-25SFIW13SXZ	1/4"	17	33	9
	RE-25SFIW17SXZ	3/8"	19		
	RE-25SFIW21SXZ	1/2"	24	36	12

# INDUSTRIAL FITTINGS - quick release couplings

## RECTUS couplings



### 27 series DN10

**Flow rate:** 3500 l/min at entrance pressure  
 $P_e = 6 \text{ bar}$  ( $\Delta p = 0.5 \text{ bar}$ , air)

**Working press.:** 35 bar

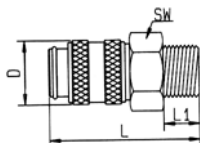
**Working temp.:** NBR: from  $-20^\circ\text{C}$  up to  $+100^\circ\text{C}$   
 EPDM: from  $-40^\circ\text{C}$  up to  $+120^\circ\text{C}$   
 Viton: from  $-15^\circ\text{C}$  up to  $+200^\circ\text{C}$   
 Kalrez: from  $0^\circ\text{C}$  up to  $+316^\circ\text{C}$   
 (depending on the medium)

**Material:** As a standard both the threaded part and the body of a socket are made of brass, locking ferrule and plug are made of hardened zinc-plated steel, valve of brass, spring and ring of AISI 301 steel, balls of AISI 420 steel, sealing of NBR. Other materials are available on request.

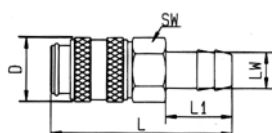
**Description:** Optimum flow efficiency with respect to the size of the coupling is obtained by ULTRA-FLO valve. For one hand operation. Approved operation at low and high temperatures.

**Application:** Due to its extremely strong and robust design the coupling is used in heavy industry.

Socket with male thread	code	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	single shut-off					
	RE-27KAAK13MPN	1/4"	24	63	27	12
	RE-27KAAK17MPN	3/8"	24	63	27	12
	RE-27KAAK21MPN	1/2"	24	65	27	17
	RE-27KAAK26MPN	3/4"	27	65	27	17
	double shut-off					
	RE-27KBAK13BPX	1/4"	24	63	27	12
	RE-27KBAK17BPX	3/8"	24	63	27	12
	RE-27KBAK21BPX	1/2"	24	65	27	17
	RE-27KBAK26BPX	3/4"	27	65	27	17

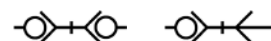


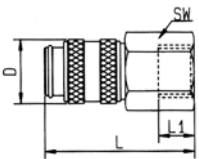
Socket with hose tail	code	hose I.D. [mm]	SW [mm]	L [mm]	D [mm]	L1 [mm]
	single shut-off					
	RE-27KATF06MPN	6	24	76	27	25
	RE-27KATF08MPN	8	24	76	27	25
	RE-27KATF09MPN	9	24	76	27	25
	RE-27KATF10MPN	10	24	76	27	25
	RE-27KATF13MPN	13	24	76	27	25
	RE-27KATF16MPN	16	24	76	27	25
	RE-27KATF19MPN	19	24	76	27	25
	double shut-off					
	RE-27KBTF06BPX	6	24	76	27	25
	RE-27KBTF08BPX	8	24	76	27	25
	RE-27KBTF09BPX	9	24	76	27	25
	RE-27KBTF10BPX	10	24	76	27	25
	RE-27KBTF13BPX	13	24	76	27	25
	RE-27KBTF16BPX	16	24	76	27	25
	RE-27KBTF19BPX	19	24	76	27	25

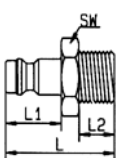


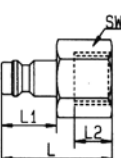
# INDUSTRIAL FITTINGS - quick release couplings

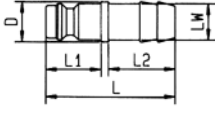
## RECTUS couplings



<b>Socket with female thread</b>  	code	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	single shut-off					
	RE-27KAIW13MPN	1/4"	24	56	27	10
	RE-27KAIW17MPN	3/8"	24	56	27	11
	RE-27KAIW21MPN	1/2"	24	56	27	12
	RE-27KAIW26MPN	3/4"	27	60	27	16
	double shut-off					
	RE-27KBIW13BPX	1/4"	24	56	27	10
	RE-27KBIW17BPX	3/8"	24	56	27	11
	RE-27KBIW21BPX	1/2"	24	56	27	12
	RE-27KBIW26BPX	3/4"	32	60	27	16

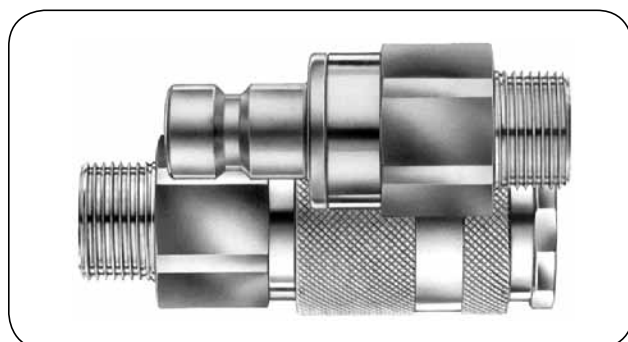
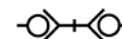
<b>Plug with male thread</b>  	code	thread size	SW [mm]	L [mm]	L1 [mm]	L2 [mm]
	single shut-off					
	RE-27SFAK13SXN	1/4"	17	40	21.5	12
	RE-27SFAK17SXN	3/8"	17	40	21.5	12
	RE-27SFAK21SXN	1/2"	22	45	21.5	17
	RE-27SFAK26SXN	3/4"	27	48	21.5	19
	double shut-off					
	RE-27SBAK13MPX	1/4"	24	60.5	21.5	12
	RE-27SBAK17MPX	3/8"	24	60.5	21.5	12
	RE-27SBAK21MPX	1/2"	24	62.5	21.5	17
	RE-27SBAK26MPX	3/4"	27	62.5	21.5	17

<b>Plug with female thread</b>  	code	thread size	SW [mm]	L [mm]	L1 [mm]	L2 [mm]
	single shut-off					
	RE-27SFIW13SXN	1/4"	17	33	21.5	9
	RE-27SFIW17SXN	3/8"	19	33	21.5	12
	RE-27SFIW21SXN	1/2"	24	37	21.5	12
	RE-27SFIW26SXN	3/4"	32	42	21.5	16
	double shut-off					
	RE-27SBIW13MPX	1/4"	24	54.5	21.5	9
	RE-27SBIW17MPX	3/8"	24	54.5	21.5	9
	RE-27SBIW21MPX	1/2"	24	54.5	21.5	12
	RE-27SBIW26MPX	3/4"	32	58.5	21.5	16

<b>Plug with hose tail</b>  	code	hose I.D. [mm]	SW [mm]	L [mm]	D [mm]	L1 [mm]	L2 [mm]
	single shut-off						
	RE-27SFTF06SXN	6		48	15	21.5	25
	RE-27SFTF08SXN	8		48	15	21.5	25
	RE-27SFTF09SXN	9		48	15	21.5	25
	RE-27SFTF10SXN	10		48	15	21.5	25
	RE-27SFTF13SXN	13		48	15	21.5	25
	RE-27SFTF16SXN	16		48	18	21.5	25
	RE-27SFTF19SXN	19		49	21	21.5	25
	double shut-off						
	RE-27SBTF06MPX	6	24	74		21.5	25
	RE-27SBTF08MPX	8	24	74		21.5	25
	RE-27SBTF09MPX	9	24	74		21.5	25
	RE-27SBFF10MPX	10	24	74		21.5	25
	RE-27SBTF13MPX	13	24	74		21.5	25
	RE-27SBTF16MPX	16	24	74		21.5	25
	RE-27SBTF19MPX	19	24	74		21.5	25

# INDUSTRIAL FITTINGS - quick release couplings

## RECTUS couplings



### 57 series DN12

**Flow rate:** 5400 l/min at entrance pressure  
Pe = 6 bar ( $\Delta p = 0.5$  bar, air)

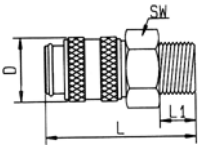
**Working press.:** 35 bar

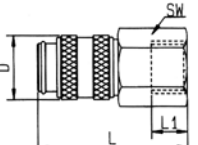
**Working temp.:** NBR: from -20°C up to +100°C  
EPDM: from -40°C up to +120°C  
Viton: from -15°C up to +200°C  
(depending on the medium)

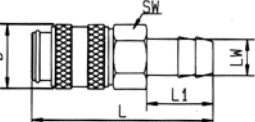
**Material:** As a standard the threaded part of a socket, body, locking ferrule, plug and valve are made of nickel-plated brass; spring and ring of AISI 301 steel, balls of AISI 420 steel, sealing of NBR.

**Description:** Due to its size and high flow rate 57 series couplings are commonly used in compressed air distribution systems. Suitable for fluids as well.

**Application:** Widely used in various branches of industry.

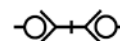
Socket with male thread 	code	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	double shut-off					
	RE-57KBAW21BPN	1/2"	34	98	40	12
	RE-57KBAW26BPN	3/4"	34	100	40	16
	RE-57KBAW33BPN	1"	41	100	40	19

Socket with female thread 	code	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	double shut-off					
	RE-57KBIW21BPN	1/2"	34	100	40	19
	RE-57KBIW26BPN	3/4"	34	100	40	16
	RE-57KBIW33BPN	1"	41	101	40	20

Socket with hose tail 	code	hose I.D. [mm]	SW [mm]	L [mm]	D [mm]	L1 [mm]
	double shut-off					
	RE-57KBTF16BPN	16	34	122	40	36
	RE-57KBTF19BPN	19	34	122	40	36

# INDUSTRIAL FITTINGS - quick release couplings

## RECTUS couplings



Plug with male thread 	code	thread size	SW [mm]	L [mm]	L1 [mm]	L2 [mm]
	double shut-off					
	RE-57SBAW17BPN	3/8"	34	86	30	12
	RE-57SBAW21BPN	1/2"	34	83	30	12
	RE-57SBAW26BPN	3/4"	34	85	30	16
	RE-57SBAW33BPN	1"	41	85	30	19

Plug with female thread 	code	thread size	SW [mm]	L [mm]	L1 [mm]	L2 [mm]
	double shut-off					
	RE-57SBIW21BPN	1/2"	34	85	30	19
	RE-57SBIW26BPN	3/4"	34	85	30	16

Plug with hose tail 	code	hose I.D. [mm]	SW [mm]	L [mm]	L1 [mm]	L2 [mm]
	double shut-off					
	RE-57SBTF13BPN	13	34	101	30	28
	RE-57SBTF16BPN	16	34	107	30	36
	RE-57SBTF19BPN	19	34	107	30	36

## RECTUKEY couplings - with coded system



Coded couplings systems are used wherever an accidental wrong socket - plug connection is not acceptable because of the risk of media mix-up.

The socket and the respective plug are colour coded and the connecting parts are of the same shape. The system is used for 21 and 25 series couplings.

# INDUSTRIAL FITTINGS - quick release couplings

## TEMA couplings

The following table enables finding the series, material and sealing of a coupling proper for the medium.

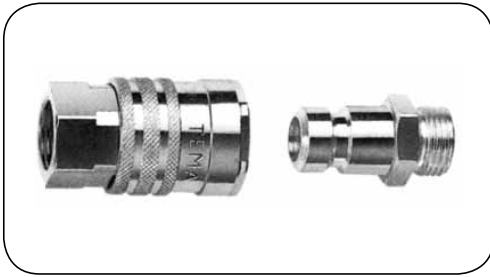
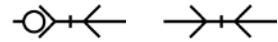
medium	DN	series	sealing			material		max. work. press. [bar]
			NBR	Viton	EPDM	steel	brass	
compressed air	5.5	1100	A	-	-	A	A	30
	6	1400	A	-	-	A	A	30
	6.8	1300	A	-	-	A	A	30
	10.4	1800	A	-	-	A	A	30
	22	2100	A	-	-	A	A	20
water (up to +80°C)	5.5	1100	A	-	-	B	A	30
	6.8	1300	A	-	-	B	A	30
	10.4	1800	A	-	-	B	A	30
	22	2100	A	-	-	B	A	20
	5	1100N	A	-	-	B	A	50
	6.8	1300N	A	-	-	B	A	50
	10	1800N	A	-	-	B	A	50
	6.8	1300H	A	-	-	B	A	100
water (over) +80°C)	10.5	1800H	A	-	-	B	A	100
	5.5	1100	-	A	A	B	A	30
	6.8	1300	-	A	A	B	A	30
	10.4	1800	-	A	A	B	A	30
	22	2100	-	A	A	B	A	20
	5	1100N	-	A	A	B	A	50
	6.8	1300N	-	A	A	B	A	50
	10	1800N	-	A	A	B	A	50
steam (up to +150°C)	6.8	1300H	-	A	A	B	A	100
	10.5	1800H	-	A	A	B	A	100
	5	1100N	-	A	B	B	A	10
	10	1800N	-	A	B	B	A	10
gases	5.5	1100	A	-	-	B	A	30
	6.8	1300	A	-	-	B	A	30
	10.4	1800	A	-	-	B	A	30
diesel oil	5	1100N	B	A	-	A	A	50
	6.8	1300N	B	A	-	A	A	50
	10	1800N	B	A	-	A	A	50
petrol	5	1100N	-	A	-	A	A	50
	6.8	1300N	-	A	-	A	A	50
	10	1800N	-	A	-	A	A	50
heating oil	5	1100N	B	-	-	A	A	50
	6.8	1300N	B	-	-	A	A	50
	10	1800N	B	-	-	A	A	50
hydraulic oil	5	1100N	A	-	-	A	A	50
	6.8	1300N	A	-	-	A	A	50
	10	1800N	A	-	-	A	A	50
engine oil	5	1100N	A	-	-	A	A	50
	6.8	1300N	A	-	-	A	A	50
	10	1800N	A	-	-	A	A	50

A - recommended

B - conditional application

# INDUSTRIAL FITTINGS - quick release couplings

## TEMA couplings

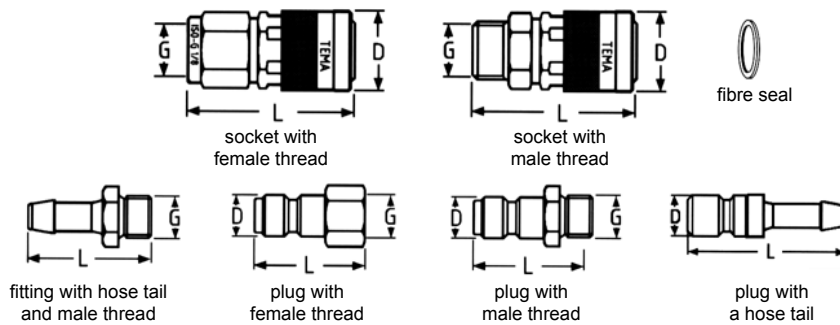


### 1100 series DN5.5

**Flow rate:** 840 l/min at entrance pressure  
 $P_e = 6 \text{ bar } (\Delta p = 0.5 \text{ bar, air})$   
**Working press.:** 30 bar  
**Working temp.:** NBR: from -40°C up to +100°C  
Viton: from -25°C up to +200°C  
EPDM: from -50°C up to +150°C  
(dependent on the medium)

**Material:** The socket is made of nickel- and chrome-plated brass, springs and balls of stainless steel, plug of zinc-plated hardened steel.

**Description:** General purpose couplings designed for compressed air, water, oil, fuel and gases. User friendly. High flow rate with small outer dimensions. The service life of seals is very long as they do not come into direct contact with the medium. The seal of the socket can be changed under pressure without any special tools.



description	code	male thread G [inch]	female thread G [inch]	DN [mm]	seal	D [mm]	L [mm]	spanner size [mm]	working pressure [bar]	hose I.D. [mm]	weight [g]	remarks
socket	TA-P-1100		1/8	5.5	NBR	18	37	15	30		40	1)
	TA-P-1100A	1/4			NBR	18	38	15			35	1)
	TA-P-1100V		1/8		Viton	18	37	15			40	1)
	TA-P-1100AV	1/4			Viton	18	38	15			35	1)
fitting with hose tail and male thread	TA-P-1105	1/8					27	12	30	5	7	
	TA-P-1106									6	8	
plug with male thread	TA-P-11110	1/8				9.5	27	12	30		9	
plug with female thread	TA-P-11410		1/8			9.5	27	12	30		10	
plug with hose tail	TA-P-11005					9.5	34		30	5	6	
	TA-P-11006									6	7	
socket cap	TA-P-2315				PVC						3	
plug cap	TA-P-125				PVC						3	
O-ring	TA-P-11310N				NBR							
	TA-P-11310V				Viton							
fibre seal	TA-P-11320											

remarks:

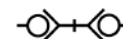
1) version without valve is marked with UV at the end of a code

The 1100 series couplings must not be connected with 1100N series.



# INDUSTRIAL FITTINGS - quick release couplings

## TEMA couplings



### 1100N series DN4.8

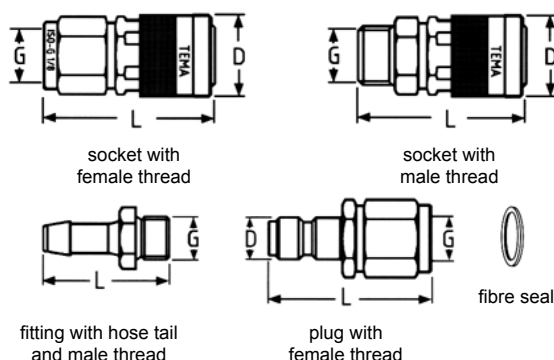
**Flow rate:** Kv = 0.57 for water  
(9.5 l/min at  $\Delta p = 1$  bar)

**Working press.:** 50 bar

**Working temp.:** NBR: from -40°C up to +100°C  
Viton: from -25°C up to +200°C  
EPDM: from -50°C up to +150°C  
(depending on the medium)

**Material:** The socket is made of nickel- and chrome-plated brass, springs and balls of stainless steel, plug of brass.

**Description:** General purpose double shut-off couplings designed for water, steam, oil and fuel. User friendly. High flow rate with small outer dimensions. The service life of seals is very long as they do not come into direct contact with the medium. The seal of a socket can be changed under pressure without any special tools.



description	code	male thread G [inch]	female thread G [inch]	DN [mm]	seal	D [mm]	L [mm]	spanner size [mm]	working pressure [bar]	hose I.D. [mm]	weight [g]	remarks
socket	TA-P-1100N		1/8	4.8	NBR	18	37	15	50		40	1)
	TA-P-1100NEP				EPDM		37				40	1)
	TA-P-1100NA	1/4			NBR		38				35	1)
	TA-P-1100NV		1/8		Viton		37				40	1)
	TA-P-1100NAV	1/4			Viton		38				35	1)
fitting with hose tail and male thread	TA-P-1105	1/8				27	12	30	5	7		
	TA-P-1106				6	8						
plug with female thread	TA-P-11410MN		1/8		NBR	9.5	36	15	20		20	1), 2)
	TA-P-11410MEP			EPDM	20						1), 2)	
	TA-P-11410MV			Viton	20						1), 2)	
socket cap	TA-P-2315				PVC						3	
plug cap	TA-P-125				PVC						3	
O-ring	TA-P-11310N				NBR							
	TA-P-11310EP				EPDM							
	TA-P-11310V				Viton							
fibre seal	TA-P-11320											

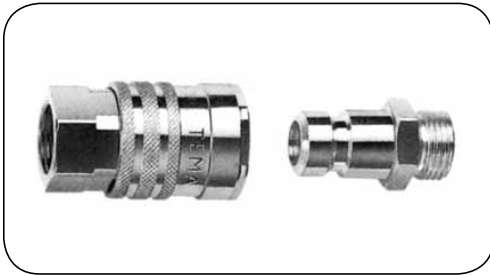
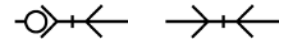
remarks:

- 1) max. working pressure for steam is 10 bar
- 2) made of brass

The 1100N series couplings must not be connected with 1100 series couplings.

# INDUSTRIAL FITTINGS - quick release couplings

## TEMA couplings



### 1300 series DN6.8

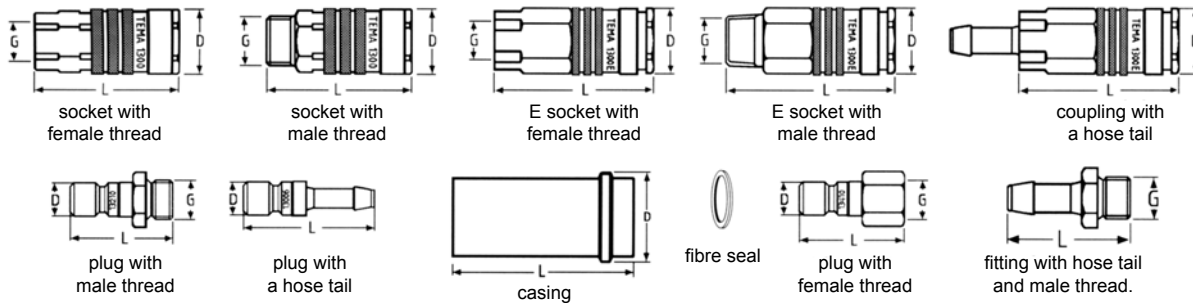
**Flow rate:** 1680 l/min at entrance pressure  
Pe = 6 bar ( $\Delta p = 0.5$  bar, air)

**Working press.:** 30 bar

**Working temp.:** NBR: from -40°C up to +100°C  
Viton: from -25°C up to +200°C  
EPDM: from -50°C up to +150°C  
(depending on the medium)

**Material:** The socket is made of nickel- and chrome-plated brass, springs and balls of stainless steel, plug of zinc-plated, hardened steel or brass. AISI 316 steel version is available on request.

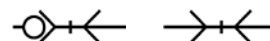
**Description:** General purpose couplings designed for compressed air, water, oil, fuel and gases. User friendly 1300E version is for one hand operation. High flow rate with small outer dimensions. Service life of the seals is very long as they do not come into direct contact with the medium. The seal of a socket can be changed under pressure without any special tools.



description	code	male thread G [inch]	female thread G [inch]	DN [mm]	seal	D [mm]	L [mm]	spanner size [mm]	working pressure [bar]	hose I.D. [mm]	weight [g]	remarks
socket	TA-P-1300		1/4	6.8	NBR	22	49	18	30		81	3)
	TA-P-1300A	3/8			NBR						75	3)
	TA-P-1300B		3/8		NBR		50	20			86	3)
	TA-P-1300V		1/4		Viton						81	3)
	TA-P-1300RV		1/4		Viton		49	18			76	3),5)
	TA-P-1300AV	3/8			Viton						75	3)
	TA-P-1300BV		3/8		Viton		50	20			86	3)
	TA-P-1300BRV				Viton						81	3),5)
socket E (one hand)	TA-P-1300E		1/4	7.4	NBR	22	55	19	30		96	
	TA-P-1300EA	3/8T			NBR		56				88	
	TA-P-1300EB		3/8		NBR		55	20			94	
	TA-P-1300EC	1/4T			NBR		58	19			92	
	TA-P-1300ED	1/2			NBR	26	57	23			108	
	TA-P-1300EEB		3/8		NBR		55	20			100	2)
E socket with hose tail (one hand)	TA-P-1300EK06			4.8	NBR	22	78	19	30		6	98
	TA-P-1300EK08			6.4	NBR						8	99
	TA-P-1300EK10				NBR						10	100
	TA-P-1300EK12			7.4	NBR		77				12	101
	TA-P-1300EEK10				NBR	26	78				10	110 2)
fitting with hose tail and male thread	TA-P-1306	1/4					37	16	30		6	16
	TA-P-1308										8	17
	TA-P-1310										10	19
	TA-P-1312						38				12	21

# INDUSTRIAL FITTINGS - quick release couplings

## TEMA couplings



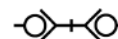
description	code	male thread G (4) [inch]	female thread G [inch]	DN [mm]	seal	D [mm]	L [mm]	spanner size [mm]	working pressure [bar]	hose I.D. [mm]	weight [g]	remarks
plug with male thread	TA-P-13110	1/8T				12	35	13	30		17	
	TA-P-13110R	1/8T					35	13			17	5)
	TA-P-13110M	1/8							10		17	1)
	TA-P-13210	1/4					38	14	30		23	
	TA-P-13210A	1/4T					38	14			23	
	TA-P-13210M	1/4					35	16	10		25	1)
	TA-P-13220	3/8T					38	17	30		27	
	TA-P-13230	1/2T					40	22			38	
plug with female thread	TA-P-13405		1/8			12	32	13	30		17	
	TA-P-13410		1/4				36	16			23	
	TA-P-13410R										23	5)
	TA-P-13411M		1/4				44	18	10		39	1)
	TA-P-13420		3/8				36	20	30		28	
plug with hose tail	TA-P-13006					12	44		30	6	14	
	TA-P-13008									7	15	
	TA-P-13010									10	16	
	TA-P-13012									12	22	
socket cap	TA-P-1315				PVC						5	
plug cap	TA-P-1325				PVC						3	
seals	TA-P-13310N				NBR							
	TA-P-13310V				Viton							
O-ring (1300E)	TA-P-N7-9.3				NBR							
casing	TA-P-1300-351				PVC	33	73				15	
fibre seal	TA-P-13320											

remarks:

- 1) made of brass, suitable for water
- 2) TURBO version
- 3) version without a valve is marked with UV at the end of a code
- 4) T - cone thread
- 5) AISI 316 steel

# INDUSTRIAL FITTINGS - quick release couplings

## TEMA couplings



### 1300N series DN5.8

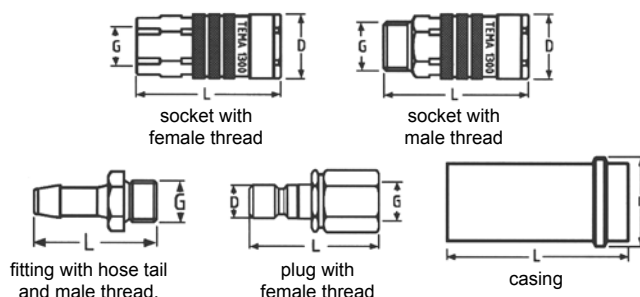
**Flow rate:** Kv = 0.81 for water  
(13.5 l/min at  $\Delta p = 1$  bar)

**Working press.:** 50 bar

**Working temp.:** NBR: from -40°C up to +100°C  
Viton: from -25°C up to +200°C  
EPDM: from -50°C up to +150°C  
(depending on the medium)

**Material:** The socket is made of nickel- and chrome-plated brass, springs and balls of stainless steel, plug of zinc-plated hardened steel or brass.

**Description:** General purpose double shut-off couplings designed for compressed water, steam, oil and fuel. User friendly. High flow rate with small outer dimensions. Service life of the seals is very long as they do not come into direct contact with the medium. The seal of a socket can be changed under pressure without any special tools.



description	code	male thread G [inch]	female thread G [inch]	DN [mm]	seal	D [mm]	L [mm]	spanner size [mm]	working pressure [bar]	hose I.D. [mm]	weight [g]	remarks
socket	TA-P-1300N	3/8	1/4	5.8	NBR	22	49	18	50		81	1)
	TA-P-1300NA				NBR		49	18			75	1)
	TA-P-1300NB	3/8	3/8		NBR		50	20			86	1)
	TA-P-1300NV		1/4		Viton		49	18			81	1)
	TA-P-1300NAV	3/8			Viton		49	18			75	1)
	TA-P-1300NBV		3/8		Viton		50	20			86	1)
fitting with hose tail and male thread	TA-P-1306	1/4					37	16	30	6	16	
	TA-P-1308									8	17	
	TA-P-1310									10	19	
	TA-P-1312									12	21	
plug with female thread	TA-P-13410MN		1/4		NBR	12	44	18	20		42	1), 2)
	TA-P-13410STN				NBR				50		40	1), 3)
	TA-P-13410MNV				Viton				20		42	1), 2)
	TA-P-13410STNV				Viton				50		40	1), 3)
socket cap	TA-P-1315				PVC						5	
plug cap	TA-P-1325				PVC						3	
O-ring	TA-P-13310N				NBR							
	TA-P-13310V				Viton							
casing	TA-P-1300-351				PVC	33	73				15	
fibre seal	TA-P-13320											

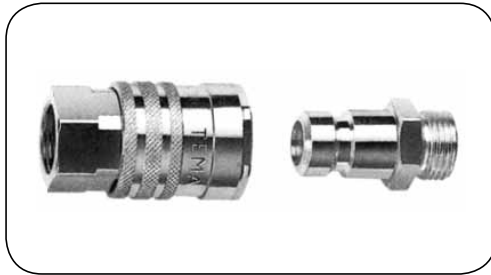
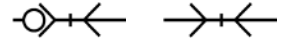
remarks:

- 1) max. working pressure for steam is 10 bar
- 2) made of brass
- 3) made of steel

The 1300N series couplings must not be connected with 1300 series couplings.

# INDUSTRIAL FITTINGS - quick release couplings

## TEMA couplings



### 1800 series DN10.4

**Flow rate:** 3500 l/min at entrance pressure

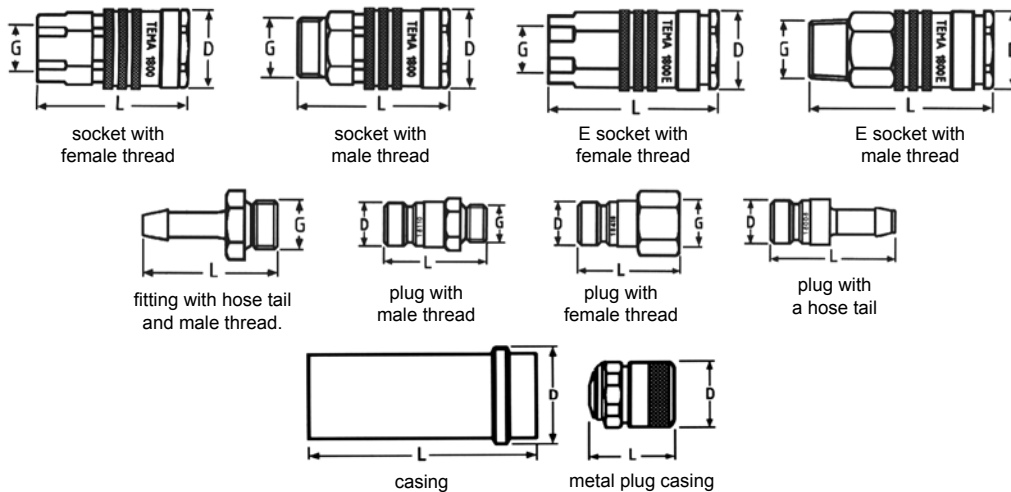
Pe = 6 bar ( $\Delta p = 0.5$  bar, air)

**Working press.:** 30 bar

**Working temp.:** NBR: from -40°C up to +100°C  
Viton: from -25°C up to +200°C  
EPDM: from -50°C up to +150°C  
(depending on the medium)

**Material:** The socket is made of nickel- and chrome-plated brass, springs and balls of stainless steel, plug of zinc-plated hardened steel or brass. AISI 316 steel version is also available.

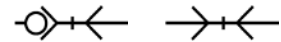
**Description:** General purpose couplings designed for compressed air, water, oil, fuel and gases. User friendly. 1800E version is for one hand operation. High flow rate with small outer dimensions. Service life of the seals is very long as they do not come into direct contact with the medium. The seal of a socket can be changed under pressure without any special tools.



description	code	male thread G (12) [inch]	female thread G [inch]	DN [mm]	seal	D [mm]	L [mm]	spanner size [mm]	working pressure [bar]	hose I.D. [mm]	weight [g]	remarks
socket	TA-P-1800		3/8	10.4	NBR	27	54	22	30		125	11)
	TA-P-1800A	1/2			NBR						115	11)
	TA-P-1800B		1/2		NBR		55	24			130	11)
	TA-P-1800C		3/4		NBR		57	30			160	11)
	TA-P-1800L				NBR						125	2), 11)
	TA-P-1800SV		3/8		Viton						125	3), 11)
	TA-P-1800RV				Viton		54	22			115	4), 7), 11)
	TA-P-1800V				Viton						125	11)
	TA-P-1800AV	1/2			Viton						115	11)
	TA-P-1800ARV				Viton						110	4), 7), 11)
	TA-P-1800BV		1/2		Viton		55	24			130	11)
	TA-P-1800BRV				Viton		57	30			135	4), 7), 11)
	TA-P-1800CV		3/4		Viton						160	11)
	TA-P-1800ST		3/8		NBR		54	22			122	9), 11)
	TA-P-1800AST	1/2			NBR						112	9), 11)
	TA-P-1800BST		1/2		NBR		55	24			127	9), 11)
socket E (one hand)	TA-P-1800E		3/8	10.2	NBR	27	60	23	30		146	
	TA-P-1800EA	1/2T			NBR		64				140	
	TA-P-1800EB		1/2		NBR		61	24			146	
	TA-P-1800EE		3/8		NBR		30	60			157	10)

# INDUSTRIAL FITTINGS - quick release couplings

## TEMA couplings



description	code	male thread. G (12) [inch]	female thread G [inch]	DN [mm]	seal	D [mm]	L [mm]	spanner size [mm]	working pressure [bar]	hose I.D. [mm]	weight [g]	remarks	
fitting with hose tail and male thread	TA-P-1806	3/8					38	19	30	6	21		
	TA-P-1808									8	23		
	TA-P-1810									10	25		
	TA-P-1810R									10	22	4)	
	TA-P-1812						12			29			
	TA-P-1812R						12			27	4)		
	TA-P-1816						16			29			
	TA-P-1816R						16			27	4)		
	TA-P-1819						19			34			
	TA-P-1912						43	21		12	36	5)	
plug with male thread	TA-P-18105	1/8T				16	36	16	30		26		
	TA-P-18110	1/4T					39				29		
	TA-P-18110MS	1/4					36		10		29	6)	
	TA-P-18210	3/8T					38	17	30		30		
	TA-P-18210R	3/8					36	19			31	4)	
	TA-P-18210SV	3/8					40	22			10	35	3)
	TA-P-18220	1/2T										41	
	TA-P-18220M	1/2					40		44		1)		
	TA-P-18230	3/4T					43	27	30		66		
plug with female thread	TA-P-18405		1/4			16	36	16	30		30		
	TA-P-18410		3/8					20			33		
	TA-P-18410R							22			41	4)	
	TA-P-18411M							49			60	1)	
	TA-P-18420	1/2	39				25	53					
plug with hose tail	TA-P-18006					16	44		30	6	20		
	TA-P-18008									8	22		
	TA-P-18010									10	24		
	TA-P-18010M									10	10	24	1)
	TA-P-18012						45		30	12	27		
	TA-P-18012M								10	12	27	1)	
	TA-P-18016								16	26			
	TA-P-18019								46	30	19	32	
socket cap	TA-P-5025				PVC								
plug cap	TA-P-2525				PVC								
casing	TA-P-1800-35				PVC	37	41				10		
	TA-P-1800-351				PVC		78				20		
metal plug casing	TA-P-18415					23	27				45	8)	
seals	TA-P-18310N				NBR								
	Viton												
	NBR										13)		
fibre seal	TA-P-18320												

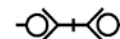
remarks:

- made of brass, suitable for water
- TA-P-1800L socket has a safety locking protection against unintentional disconnection
- TA-P-1800SV socket can only be connected with TA-P-18210SV plug
- made of stainless steel AISI 316
- made of steel
- plug TA-P-18110MS equipped with filter
- max. working pressure for liquids is 50 bar
- can be coupled with all plugs except TA-P-18210SV
- locking ring made of steel
- TURBO version
- version without valve is marked with UV at the end of a code
- T - cone thread
- for TA-P-1800E socket

The 1800 series couplings must not be connected with 1800N series.

# INDUSTRIAL FITTINGS - quick release couplings

## TEMA couplings



### 1800N series DN9.5

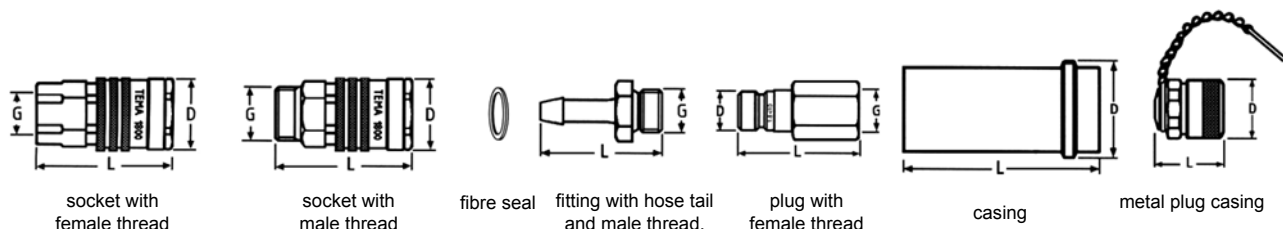
**Flow rate:** Kv = 2.08 for water  
(34.7 l/min at  $\Delta p = 1$  bar)

**Working press.:** 50 bar

**Working temp.:** NBR: from -40°C up to +100°C  
Viton: from -25°C up to +200°C  
EPDM: from -50°C up to +150°C  
(depending on the medium)

**Material:** The socket is made of nickel- and chrome-plated brass, springs and balls of stainless steel, plug of zinc-plated, hardened steel or brass. AISI 316 steel version is also available.

**Description:** General purpose double shut-off couplings designed for compressed water, steam, oil and fuel. User friendly. High flow rate with small outer dimensions. Service life of the seals is very long as they do not come into direct contact with the medium. The seal of a socket can be changed under pressure without any special tools.



description	code	male thread G [inch]	female thread G [inch]	DN [mm]	seal	D [mm]	L [mm]	spanner size [mm]	working pressure [bar]	hose I.D. [mm]	weight [g]	remarks
socket	TA-P-1800N	1/2	3/8	9.5	NBR	27	54	22	50		125	1)
	TA-P-1800NA		NBR				115	1)				
	TA-P-1800NB		1/2				130	1)				
	TA-P-1800NBA	1/2	EPDM		55		25	138			1),5)	
	TA-P-1800NC	3/4	NBR		57		30	160			1)	
	TA-P-1800NV	3/8	Viton		54		22	125			1)	
	TA-P-1800NAV	1/2	Viton					115			1)	
	TA-P-1800NBV	1/2	1/2		Viton		55	24			130	1)
TA-P-1800NCV	3/4		Viton	57	30	160	1)					
fitting with hose tail and male thread	TA-P-1806	3/8					38	19	30	6	21	
	TA-P-1808									8	23	
	TA-P-1810									10	25	
	TA-P-1812						39			12	29	
	TA-P-1816									16	29	
	TA-P-1819									19	34	
plug with female thread	TA-P-18410MN	1/2 NPTF	3/8		NBR	16	49	22	10		70	1),2)
	TA-P-18410STN		NBR		50				65		1),3)	
	TA-P-18420MN		NBR		47				25		60	1),2),4)
	TA-P-18422MNA	3/8	1/2		NBR		52	25	10		90	1),5)
	TA-P-18410MNV		Viton		49		22	50	70		1),2)	
	TA-P-18410STV		Viton						65		1),3)	
	TA-P-18422MNAV	1/2	Viton		52		25	10	90		1),5)	
socket cap	TA-P-5025				PVC							
plug cap	TA-P-2525				PVC							
O-ring	TA-P-18310N				NBR							
	TA-P-18310V				Viton							
casing	TA-P-1800-35				PVC	37	41				10	
	TA-P-1800-351				PVC		78				20	
metal plug casing	TA-P-18415					23	27				45	
fibre seal	TA-P-18320											

remarks:

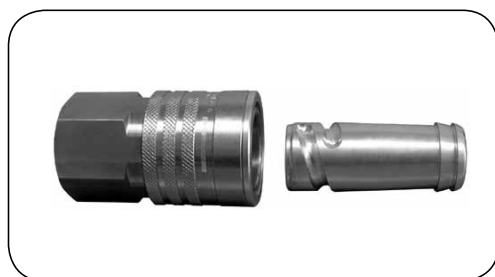
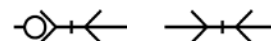
- max. working pressure for steam is 10 bar
- made of brass
- made of steel

- male thread 1/2" NPTF
- made of brass resistant to dezincification

The 1800N series couplings must not be connected with 1800 series.

# INDUSTRIAL FITTINGS - quick release couplings

## TEMA couplings



### 2100 series DN22

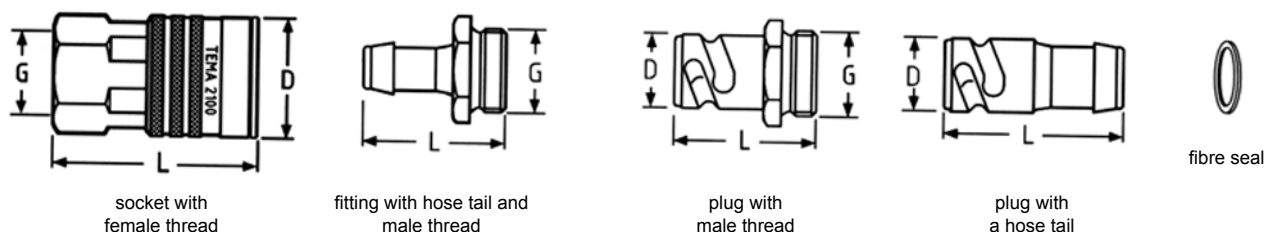
**Flow rate:** 12000 l/min at entrance pressure  
Pe = 6 bar ( $\Delta p = 0.5$  bar, air)

**Working press.:** 20 bar

**Working temp.:** NBR: from -40°C up to +100°C  
Viton: from -25°C up to +200°C  
(depending on the medium)

**Material:** The socket is made of brass, ferrule of zinc-plated steel, springs and balls of stainless steel, plug of zinc-plated and hardened steel.

**Description:** General purpose large diameter couplings designed mainly for compressed air. Suitable for fluids. High flow rate with small outer dimensions. Service life of the seals is very long as they do not come into direct contact with the medium. The seal of a socket can be changed under pressure without any special tools. The design of the coupling enables venting before disconnection.



description	code	male thread G [inch]	female thread G [inch]	DN [mm]	seal	D [mm]	L [mm]	spanner size [mm]	working pressure [bar]	hose I.D. [mm]	weight [g]	remarks
socket	TA-P-2100		1	22	NBR	48	82	41	20		570	1)
	TA-P-2100V				Viton	48	82	41			570	1)
fitting with hose tail and male thread	TA-P-2119	1					57	37	20	19	122	
	TA-P-2125						64	37		25	150	
	TA-P-2132									32	200	
plug with male thread	TA-P-21210	1				29	57	36	20		140	
plug with hose tail	TA-P-21019					29	74		20	19	120	
	TA-P-21025						79			25	140	
	TA-P-21032									32	200	
socket cap	TA-P-10026				PVC						54	
plug cap	TA-P-5025				PVC						23	
O-ring	TA-P-21310N				NBR							
	TA-P-21310V				Viton							
fibre seal	TA-P-21320											

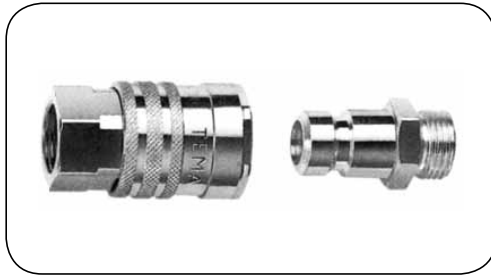
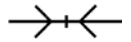
remarks:

1) version without valve is marked with UV at the end of a code.



# INDUSTRIAL FITTINGS - quick release couplings

## TEMA couplings



### 1300H series DN6.8

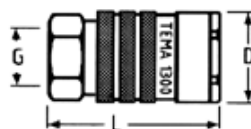
**Flow rate:** Kv = 2.45 for water  
(40.8 l/min at  $\Delta p = 1$  bar)

**Working press.:** 100 bar

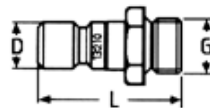
**Working temp.:** NBR: from -40°C up to +100°C  
Viton: from -25°C up to +200°C  
EPDM: from -50°C up to +150°C  
(depending on the medium)

**Material:** The socket is made of nickel- and chrome-plated brass, springs and balls of stainless steel, plug of zinc-plated hardened steel or brass.

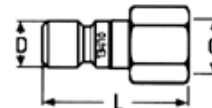
**Description:** Couplings without valves are designed for high pressure water. User friendly. High flow rate with small outer dimensions.



socket with  
female thread



plug with  
male thread



plug with  
female thread

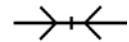
description	code	male thread G (3) [inch]	female thread G [inch]	DN [mm]	seal	D [mm]	L [mm]	spanner size [mm]	working pressure 2) [bar]	hose I.D. [mm]	weight [g]	remarks
socket	TA-P-1300H		1/4	6.8	NBR	22	41	18	100		70	
	TA-P-1300HV				Viton						70	
plug with male thread	TA-P-13110	1/8T				12	35	13	100		17	
	TA-P-13110M	1/8					38	14	100		17	1)
	TA-P-13210	1/4					35	16	10		23	
	TA-P-13210M	1/4					38	17	100		25	1)
	TA-P-13220	3/8T					40	22			27	
	TA-P-13230	1/2T									38	
plug with female thread	TA-P-13405		1/8			12	32	13	100		17	
	TA-P-13410		1/4				36	16			23	
	TA-P-13411M		3/8				44	18	10		39	1)
	TA-P-13420						36	20	100		28	
seals	TA-P-13310N				NBR							
	TA-P-13310V				Viton							

remarks:

- 1) made of brass
- 2) working pressure given for plugs - only for fluids
- 3) T - cone thread

# INDUSTRIAL FITTINGS - quick release couplings

## TEMA couplings



### 1800H series DN10.5

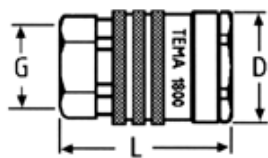
**Flow rate:** Kv = 5.2 for water  
(86.7 l/min at  $\Delta p = 1$  bar)

**Working press.:** 100 bar

**Working temp.:** NBR: from -40°C up to +100°C  
Viton: from -25°C up to +200°C  
EPDM: from -50°C up to +150°C  
(depending on the medium)

**Material:** The socket is made of nickel- and chrome-plated brass, springs and balls of stainless steel, plug of zinc-plated hardened steel or brass. AISI 316 is available on request.

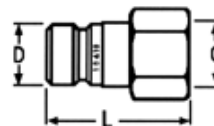
**Description:** Couplings without valves are designed for high pressure water. User friendly. High flow rate with small outer dimensions.



socket with  
female thread



plug with  
male thread



plug with  
female thread

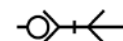
description	code	male thread G (4) [inch]	female thread G [inch]	DN [mm]	seal	D [mm]	L [mm]	spanner size [mm]	working pressure (3) [bar]	hose I.D. [mm]	weight [g]	remarks
socket	TA-P-1800H		3/8	10.5	NBR	27	43	22	100		100	
	Viton				100							
plug with male thread	TA-P-18105	1/8T				16	36	16	100		26	
	TA-P-18110	1/4									29	
	TA-P-18110A	1/4T									31	
	TA-P-18210	3/8									30	
	TA-P-18210R	3/8					36	19			31	2)
	TA-P-18220	1/2T					40	22			41	
	TA-P-18220M	1/2					43	27			66	1)
	TA-P-18230	3/4T										
plug with female thread	TA-P-18405		1/4			16	35	16	100		30	
	TA-P-18410		3/8				36	20			33	
	TA-P-18410R	36					22	10	41		2)	
	TA-P-18411M								60		1)	
	TA-P-18420	1/2					39	25	100		53	
seals	TA-P-18310N				NBR							
	Viton											

remarks:

- 1) made of brass
- 2) made of stainless steel
- 3) working pressure given for plugs - only for fluids
- 4) T - cone thread

# INDUSTRIAL FITTINGS - quick release couplings

## CEJN couplings



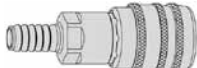


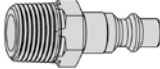


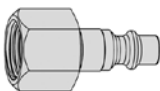
### 310 series DN5.3

**Material:** Body - brass / zinc-plated steel  
 Ferrule, plug - hardened zinc-plated steel  
 Valve: brass

**Flow rate:** Spring and balls: stainless steel,  
 925 l/min (Pe = 6 bar, Δp=0.5 bar)  
 950 l/min - ESAFE (Pe = 6 bar, Δp=0.5 bar)

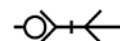
**Working press.:** 16 bar (safety factor 8.75:1)  
**Working temp.:** From -20°C up to +100°C (NBR)

A single shut-off quick release coupling for general purpose application in industry, mainly in pneumatic systems. For one hand operation with minimum coupling force. Manufactured according to ISO 6150B (MIL C-4109). Available socket versions: STANDARD, ESAFE (vented safety version, vented before disconnection to avoid the risk of sudden separation, complies with ISO 4414 and EN 983 standard), SOFT-LINE (in soft housing, to protect quick release coupling from mechanical impact), MULTI-LINK (for modular connection systems).

picture	code	connection	picture	code	connection
	CJ-103102002	6.3 mm		CJ-103105001	5 mm
	CJ-103102003	8 mm		CJ-103105002	6.3 mm
	CJ-103102009	9 mm		CJ-103105003	8 mm
	CJ-103102004	10 mm		CJ-103105004	10 mm
	CJ-103102005	13 mm		CJ-103105005	13 mm
	CJ-103102152	1/4" BSPT male		CJ-103105151	1/8" BSPT male
	CJ-103102154	3/8" BSPT male		CJ-103105152	1/4" BSPT male
	CJ-103102155	1/2" BSPT male		CJ-103105154	3/8" BSPT male
	CJ-103102202	1/4" BSP female		CJ-103105252	1/4" BSP male
	CJ-103102204	3/8" BSP female		CJ-103105451	1/8" NPT male
	CJ-103102205	1/2" BSP female		CJ-103105452	1/4" NPT male
	CJ-103101240	1/4" BSP female		CJ-103105454	3/8" NPT male
	CJ-103101241	3/8" BSP female		CJ-103105455	1/2" NPT male
	CJ-103101446	1/4" NPT female		CJ-103105201	1/8" BSP female
	CJ-103101447	3/8" NPT female		CJ-103105202	1/4" BSP female
				CJ-103105204	3/8" BSP female
				CJ-103105401	1/8" NPT female
				CJ-103105402	1/4" NPT female
				CJ-103105404	3/8" NPT female

# INDUSTRIAL FITTINGS - quick release couplings





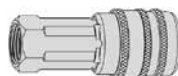
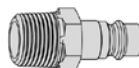



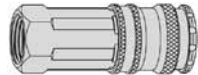
## CEJN couplings



### 320 series DN7.6

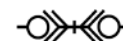
**Material:** Body - brass / zinc-plated steel  
 Ferrule, plug - hardened zinc-plated steel  
 Valve: brass  
 Spring and balls: stainless steel,  
**Flow rate:** 2100 l/min (Pe = 6 bar, Δp=0.5 bar)  
 2250 l/min - ESAFE (Pe = 6 bar, Δp=0.5 bar)  
**Working press.:** 16 bar (safety factor 8.75:1)  
**Working temp.:** From -20°C up to +100°C (NBR)

A single shut-off quick release coupling for general purpose application in industry, mainly in pneumatic systems. For one hand operation with minimum coupling force. Manufactured according to Eurostandard 7.6. Available socket versions: STANDARD, ESAFE (vented safety version, vented before disconnection to avoid the risk of sudden separation, complies with ISO 4414 and EN 983 standard), SOFT-LINE (in soft housing, to protect quick release coupling from mechanical impact), MULTI-LINK (for modular connection systems).

picture	code	connection	picture	code	connection	
	CJ-103202002	6.3 mm		CJ-103205001	5 mm	
	CJ-103202003	8 mm		CJ-103205002	6.3 mm	
	CJ-103202009	9 mm		CJ-103205003	8 mm	
	CJ-103202004	10 mm		CJ-103205009	9 mm	
	CJ-103202005	13 mm		CJ-103205004	10 mm	
	CJ-103201932	6.3 mm		CJ-103205005	13 mm	
	CJ-103201934	10 mm		CJ-103205151	1/8" BSPT male	
	CJ-103201935	13 mm		CJ-103205152	1/4" BSPT male	
	CJ-103202152	1/4" BSPT male		CJ-103205154	3/8" BSPT male	
	CJ-103202154	3/8" BSPT male		CJ-103205155	1/2" BSPT male	
	CJ-103202155	1/2" BSPT male	CJ-103205263	1/4" BSP male		
	CJ-103202202	1/4" BSP female		CJ-103205264	3/8" BSP male	
	CJ-103202204	3/8" BSP female		CJ-103205265	1/2" BSP male	
	CJ-103202205	1/2" BSP female		CJ-103205451	1/8" NPT male	
	CJ-103201086	10 mm		CJ-103205452	1/4" NPT male	
	CJ-103201087	13 mm		CJ-103205454	3/8" NPT male	
	CJ-103201246	1/4" BSP female		CJ-103205455	1/2" NPT male	
	CJ-103201247	3/8" BSP female			CJ-103205201	1/8" BSP female
	CJ-103201942	1/4" BSP female			CJ-103205202	1/4" BSP female
					CJ-103205204	3/8" BSP female
					CJ-103205205	1/2" BSP female
					CJ-103205401	1/8" NPT female
					CJ-103205402	1/4" NPT female
					CJ-103205404	3/8" NPT female
				CJ-103205405	1/2" NPT female	

## INDUSTRIAL FITTINGS - quick release couplings

### CEJN couplings



#### 324 series DN6.2

**Material:** Body, ferrule, plug: nickel-plated brass  
Valve: brass  
Spring and balls: stainless steel

**Flow rate:** 42 l/min

**Working press.:** 35 bar (safety factor 6:1)

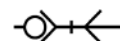
**Working temp.:** From -20°C up to +100°C (NBR)

A double shut-off quick release couplings widely used in industry, mainly for fluids. Due to their small size, they can be used in cooling systems in injection moulding. Made of nickel-plated brass. Sealing of NBR. Designed for one hand operation with little coupling force. Dust caps are supplied as a standard.

description	code	connection	seal	length [mm]	diameter [mm]	spanner size [mm]
Socket with hose tail	CJ-103241003	8 mm	NBR	68.3	23.4	20
	CJ-103241004	10 mm	NBR	67.3	23.4	20
	CJ-103241005	13 mm	NBR	66.3	23.4	20
Socket with male thread BSPT	CJ-103241152	1/4"	NBR	59.3	23.4	20
	CJ-103241154	3/8"	NBR	58.3	23.4	20
	CJ-103241155	1/2"	NBR	51.8	25.4	22
Socket with female thread BSP	CJ-103241202	1/4"	NBR	56.3	23.4	20
	CJ-103241204	3/8"	NBR	56.3	25.4	22
	CJ-103241205	1/2"	NBR	60.3	28.9	25
	CJ-103241212	1/4"	Viton	56.7	23.4	20
	CJ-103241222	1/4"	EPDM	56.7	23.4	20
Plug with female thread BSP	CJ-103246202	1/4"	NBR	52.1	23.1	20
	CJ-103246212	1/4"	FPM	52.1	23.1	20
	CJ-103246222	1/4"	EPDM	52.1	23.1	20
	CJ-103246402	1/4" NPT	NBR	52.1	23.1	20

# INDUSTRIAL FITTINGS - quick release couplings

## CEJN couplings



### 410 series DN10.4

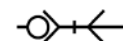
**Material:** Body - brass / zinc-plated steel  
 Ferrule, plug - hardened zinc-plated steel  
 Valve: brass  
 Spring and balls: stainless steel,  
**Flow rate:** 3900 l/min (Pe = 6 bar, Δp=0.5 bar)  
 4000 l/min - ESAFE (Pe = 6 bar, Δp=0.5 bar)  
**Working press.:** 16 bar (safety factor 8.75:1)  
**Working temp.:** From -20°C up to +100°C (NBR)

A single shut-off quick release coupling for general purpose application in industry, mainly in pneumatic systems. For one hand operation with minimum coupling force. Manufactured according to Eurostandard 10.4. Available socket versions: STANDARD and ESAFE (vented safety version, vented before disconnection to avoid the risk of sudden separation, complies with ISO 4414 and EN 983 standard).

picture	code	connection	picture	code	connection
	CJ-104102003	8 mm		CJ-104105002	6.3 mm
	CJ-104102004	10 mm		CJ-104105003	8 mm
	CJ-104102005	13 mm		CJ-104105004	10 mm
	CJ-104102006	16 mm		CJ-104105005	13 mm
	CJ-104102007	19 mm		CJ-104105006	16 mm
	CJ-104102154	3/8" BSPT male		CJ-104105007	19 mm
	CJ-104102155	1/2" BSPT male		CJ-104105152	1/4" BSPT male
	CJ-104102157	3/4" BSPT male		CJ-104105154	3/8" BSPT male
	CJ-104102204	3/8" BSP female		CJ-104105155	1/2" BSPT male
	CJ-104102205	1/2" BSP female		CJ-104105157	3/4" BSPT male
	CJ-104102207	3/4" BSP female		CJ-104105454	3/8" NPT male
				CJ-104105455	1/2" NPT male
				CJ-104105457	3/4" NPT male
				CJ-104105202	1/4" BSP female
				CJ-104105204	3/8" BSP female
				CJ-104105205	1/2" BSP female
				CJ-104105207	3/4" BSP female
				CJ-104105404	3/8" NPT female
				CJ-104105405	1/2" NPT female
				CJ-104105407	3/4" NPT female

# INDUSTRIAL FITTINGS - quick release couplings

## NITTO KOHKI couplings



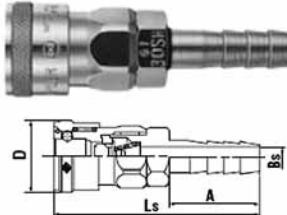
### HI CUPLA

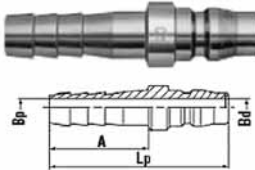
**Flow rate:** 4000 l/min (1"), 3200 l/min (3/4"),  
2600 l/min (1/2"), 1600 l/min (3/8"),  
1000 l/min (1/4") - at 5 bar

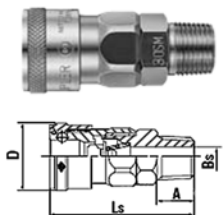
**Working press.:** 10 bar (brass), 15 bar (steel AISI 304)

**Working temp.:** NBR: from -20°C up to +80°C (standard)  
Viton: from -20°C up to +180°C (option)

General purpose single shut-off quick release couplings, highly durable and resistant to vibrations. Designed to connect pneumatic tools to air installation (made of chromium-plated carbon steel) or water installations (made of brass, stainless steel). Standard sealing made of NBR, Viton as an option.  
Attention! medium must always flow from socket to plug.

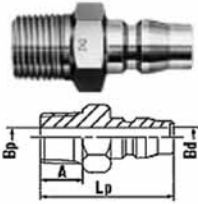
<b>Socket with hose tail</b> 	code (brass)	code (carbon steel)	code (AISI 304)	hose DN [inch]	Ls [mm]	D [mm]	A [mm]	Bs [mm]
	NK-20SH-B	NK-20SH-S	NK-20SH-SS	1/4	72.5	26.5	30	5
	NK-30SH-B	NK-30SH-S	NK-30SH-SS	3/8	76.5	26.5	34	7.5
	NK-40SH-B	NK-40SH-S	NK-40SH-SS	1/2	78.5	26.5	36	9
	NK-400SH-B	NK-400SH-S	NK-400SH-SS	1/2	83	35	36	9
	NK-600SH-B	NK-600SH-S	NK-600SH-SS	3/4	92	35	45	14
	NK-800SH-B	NK-800SH-S	NK-800SH-SS	1	102	35	55	16

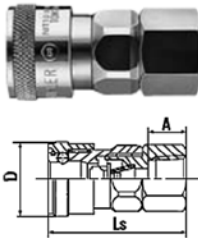
<b>Plug with hose tail</b> 	code (brass)	code (carbon steel)	code (AISI 304)	hose DN [inch]	Lp [mm]	A [mm]	Bp [mm]	Bd [mm]
	NK-20PH-B	NK-20PH-S	NK-20PH-SS	1/4	57	30	5	7.5
	NK-30PH-B	NK-30PH-S	NK-30PH-SS	3/8	61	34	7.5	7.5
	NK-40PH-B	NK-40PH-S	NK-40PH-SS	1/2	63	36	7.5	7.5
	NK-400PH-B	NK-400PH-S	NK-400PH-SS	1/2	66	36	9	13
	NK-600PH-B	NK-600PH-S	NK-600PH-SS	3/4	77	45	13	13
	NK-800PH-B	NK-800PH-S	NK-800PH-SS	1	85	54	20	13

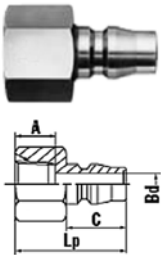
<b>Socket with BSPT male thread</b> 	code (brass)	code (carbon steel)	code (AISI 304)	thread size [inch]	Ls [mm]	D [mm]	A [mm]	Bs [mm]
	NK-20SM-B	NK-20SM-S	NK-20SM-SS	1/4	55.5	26.5	13	7
	NK-30SM-B	NK-30SM-S	NK-30SM-SS	3/8	56.5	26.5	14	8
	NK-40SM-B	NK-40SM-S	NK-40SM-SS	1/2	59.5	26.5	16	9
	NK-400SM-B	NK-400SM-S	NK-400SM-SS	1/2	63	35	16	13
	NK-600SM-B	NK-600SM-S	NK-600SM-SS	3/4	67	35	19	16
	NK-800SM-B	NK-800SM-S	NK-800SM-SS	1	72	35	22	16

# INDUSTRIAL FITTINGS - quick release couplings

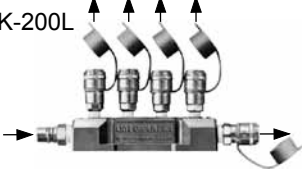
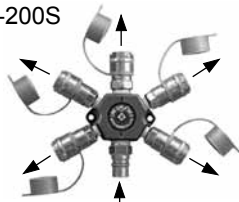
## NITTO KOHKI couplings

Plug with BSPT male thread 	code (brass)	code (carbon steel)	code (AISI 304)	thread size [inch]	Lp [mm]	A [mm]	Bp [mm]	Bd [mm]
	NK-20PM-B	NK-20PM-S	NK-20PM-SS	1/4	41	13	7.5	7.5
	NK-30PM-B	NK-30PM-S	NK-30PM-SS	3/8	42	14	7.5	7.5
	NK-40PM-B	NK-40PM-S	NK-40PM-SS	1/2	46	16	12	7.5
	NK-400PM-B	NK-400PM-S	NK-400PM-SS	1/2	50	16	13	13
	NK-600PM-B	NK-600PM-S	NK-600PM-SS	3/4	55	18	19	13
	NK-800PM-B	NK-800PM-S	NK-800PM-SS	1	63	22	22	13

Socket with BSPT female thread 	code (brass)	code (carbon steel)	code (AISI 304)	thread size [inch]	Ls [mm]	A [mm]	D [mm]
	NK-20SF-B	NK-20SF-S	NK-20SF-SS	1/4	49.5	13	26.5
	NK-30SF-B	NK-30SF-S	NK-30SF-SS	3/8	50.5	14	26.5
	NK-40SF-B	NK-40SF-S	NK-40SF-SS	1/2	52.5	15	26.5
	NK-400SF-B	NK-400SF-S	NK-400SF-SS	1/2	57	15	35
	NK-600SF-B	NK-600SF-S	NK-600SF-SS	3/4	61	17	35
	NK-800SF-B	NK-800SF-S	NK-800SF-SS	1	68	22	35

Plug with BSPT female 	code (brass)	code (carbon steel)	code (AISI 304)	thread size [inch]	Lp [mm]	A [mm]	C [mm]	Bd [mm]
	NK-20PF-B	NK-20PF-S	NK-20PF-SS	1/4	36	13	20	7.5
	NK-30PF-B	NK-30PF-S	NK-30PF-SS	3/8	37	14	20	7.5
	NK-40PF-B	NK-40PF-S	NK-40PF-SS	1/2	38	15	20	7.5
	NK-400PF-B	NK-400PF-S	NK-400PF-SS	1/2	41	15	23	13
	NK-600PF-B	NK-600PF-S	NK-600PF-SS	3/4	45	17	23	13
	NK-800PF-B	NK-800PF-S	NK-800PF-SS	1	54	22	23	13

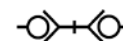
## HI CUPLA - divider system

NK-200L  NK-200S 	code	connection		description
		inlet (plug)	outlet (socket)	
	NK-200L	1/2"	1 x 1/2" 4 x 1/4"	HI CUPLA divider system (version of chromium-plated steel with caps). Body material: aluminium. Seal: NBR. Working press: 15 bar. Working temp.: from -5°C up to +60°C
	NK-200S	1/2"	1 x 1/2" 4 x 1/4"	



# INDUSTRIAL FITTINGS - quick release couplings

## NITTO KOHKI couplings



### SP CUPLA type A

**Working press.:** Brass

50 bar (1/8", 1/4", 3/8")  
30 bar (1/2", 3/4", 1")  
20 bar (1.1/4", 1.1/2")  
15 bar (2")

Carbon steel, AISI 304

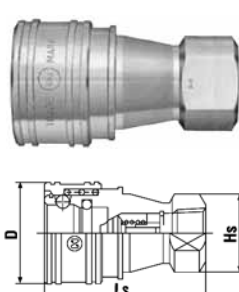
75 bar (1/8", 1/4", 3/8")  
45 bar (1/2", 3/4", 1")  
30 bar (1.1/4", 1.1/2")  
20 bar (2")

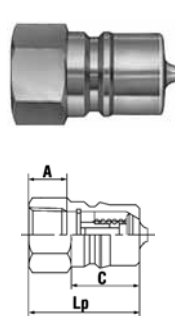
**Working temp.:** NBR: from -20°C up to +80°C (standard)

Viton: from -20°C up to +180°C (option)

EPDM: from -40°C up to +150°C (option)

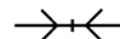
A general purpose double shut-off quick release coupling which features excellent durability. It is used for water, hydraulic oil, steam, chemicals, air and gases. Material: brass, chromium-plated carbon steel, stainless steel. It is also available with BSP female thread from 1/4" to 1".

Socket with BSPT female thread  	code (brass)	code (carbon steel)	code (AISI 304)	thread size [inch]	Ls [mm]	D [mm]	Hs [mm]
	NK-1S-A-B	-	NK-1S-A-SS	1/8	48	24	14
	NK-2S-A-B	NK-2S-A-S	NK-2S-A-SS	1/4	58	28	19
	NK-3S-A-B	NK-3S-A-S	NK-3S-A-SS	3/8	65	35	21
	NK-4S-A-B	NK-4S-A-S	NK-4S-A-SS	1/2	72	45	29
	NK-6S-A-B	NK-6S-A-S	NK-6S-A-SS	3/4	88	55	35
	NK-8S-A-B	NK-8S-A-S	NK-8S-A-SS	1	102	65	41
	NK-10S-A-B	NK-10S-A-S	NK-10S-A-SS	1.1/4	115	77	54
	NK-12S-A-B	NK-12S-A-S	NK-12S-A-SS	1.1/2	124	88	63
	NK-16S-A-B	NK-16S-A-S	NK-16S-A-SS	2	132	108	77

Plug with BSPT female thread  	code (brass)	code (carbon steel)	code (AISI 304)	thread size [inch]	Lp [mm]	C [mm]	Hp [mm]
	NK-1P-A-B	-	NK-1P-A-SS	1/8	29	19	14
	NK-2P-A-B	NK-2P-A-S	NK-2P-A-SS	1/4	36	22	17
	NK-3P-A-B	NK-3P-A-S	NK-3P-A-SS	3/8	40	25	21
	NK-4P-A-B	NK-4P-A-S	NK-4P-A-SS	1/2	44	28	29
	NK-6P-A-B	NK-6P-A-S	NK-6P-A-SS	3/4	52	36	35
	NK-8P-A-B	NK-8P-A-S	NK-8P-A-SS	1	62	40	41
	NK-10P-A-B	NK-10P-A-S	NK-10P-A-SS	1.1/4	70	45	54
	NK-12P-A-B	NK-12P-A-S	NK-12P-A-SS	1.1/2	75	49	63
	NK-16P-A-B	NK-16P-A-S	NK-16P-A-SS	2	80	52	77

# INDUSTRIAL FITTINGS - quick release couplings

## NITTO KOHKI couplings



### TSP CUPLA

**Working press.:** Brass

50 bar (1/8", 1/4", 3/8")  
30 bar (1/2", 3/4", 1")  
20 bar (1.1/4", 1.1/2")  
15 bar (2")

Carbon steel, AISI 304

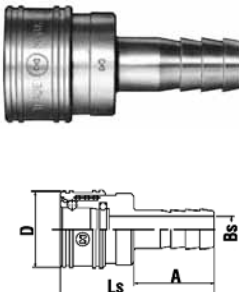
75 bar (1/8", 1/4", 3/8")  
45 bar (1/2", 3/4", 1")  
30 bar (1.1/4", 1.1/2")  
20 bar (2")

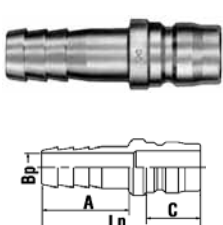
**Working temp.:** NBR: from -20°C up to +80°C (standard)

Viton: from -20°C up to +180°C (option)

EPDM: from -40°C up to +150°C (option)

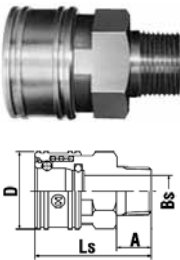
A general purpose full flow quick release couplings which feature excellent durability. It is used for water, hydraulic oils, steam, chemicals, air and gases. Material: brass, nickel-plated carbon steel, stainless steel. Especially recommended for high viscosity fluids, e.g. lubricants. It is also available with BSP female thread from 1/4" to 1".

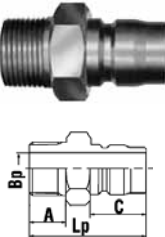
Socket with hose tail  	code (brass)	code (carbon steel)	code (AISI 304)	hose DN [inch]	Ls [mm]	D [mm]	A [mm]	Bs [mm]
	NK-1TSH-B	-	NK-1TSH-SS	1/8	40	17.5	20	3
	NK-2TSH-B	NK-2TSH-S	NK-2TSH-SS	1/4	55	24	29	5
	NK-3TSH-B	NK-3TSH-S	NK-3TSH-SS	3/8	62	28	32	7
	NK-4TSH-B	NK-4TSH-S	NK-4TSH-SS	1/2	74	35	39	10
	NK-6TSH-B	NK-6TSH-S	NK-6TSH-SS	3/4	90	45	48	15
	NK-8TSH-B	NK-8TSH-S	NK-8TSH-SS	1	102	58	57	19
	NK-10TSH-B	NK-10TSH-S	NK-10TSH-SS	1.1/4	117	69	70	26
	NK-12TSH-B	NK-12TSH-S	NK-12TSH-SS	1.1/2	128	75	75	32
	NK-16TSH-B	NK-16TSH-S	NK-16TSH-SS	2	141	98	80	40


Plug with hose tail  	code (brass)	code (carbon steel)	code (AISI 304)	hose DN [inch]	Lp [mm]	C [mm]	A [mm]	Bp [mm]
	NK-1TPH-B	-	NK-1TPH-SS	1/8	41	15.5	20	3
	NK-2TPH-B	NK-2TPH-S	NK-2TPH-SS	1/4	53	18	29	5
	NK-3TPH-B	NK-3TPH-S	NK-3TPH-SS	3/8	60	21	32	7
	NK-4TPH-B	NK-4TPH-S	NK-4TPH-SS	1/2	70	24	39	10
	NK-6TPH-B	NK-6TPH-S	NK-6TPH-SS	3/4	84	28	48	15
	NK-8TPH-B	NK-8TPH-S	NK-8TPH-SS	1	105	36	57	19
	NK-10TPH-B	NK-10TPH-S	NK-10TPH-SS	1.1/4	121	39	70	26
	NK-12TPH-B	NK-12TPH-S	NK-12TPH-SS	1.1/2	132	45	75	32
	NK-16TPH-B	NK-16TPH-S	NK-16TPH-SS	2	142	51	80	40

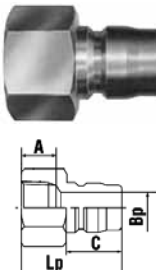
# INDUSTRIAL FITTINGS - quick release couplings

## NITTO KOHKI couplings

<b>Socket with BSPT male thread</b>  	code (brass)	code (carbon steel)	code (AISI 304)	thread size [inch]	Ls [mm]	D [mm]	A [mm]	Bs [mm]
	NK-1TSM-B	-	NK-1TSM-SS	1/8	30	17.5	9	4.5
	NK-2TSM-B	NK-2TSM-S	NK-2TSM-SS	1/4	42	24	13	6.5
	NK-3TSM-B	NK-3TSM-S	NK-3TSM-SS	3/8	46	28	13	10
	NK-4TSM-B	NK-4TSM-S	NK-4TSM-SS	1/2	56	35	17	13
	NK-6TSM-B	NK-6TSM-S	NK-6TSM-SS	3/4	65	45	19	18
	NK-8TSM-B	NK-8TSM-S	NK-8TSM-SS	1	76	58	22	24
	NK-10TSM-B	NK-10TSM-S	NK-10TSM-SS	1.1/4	86	69	25	32
	NK-12TSM-B	NK-12TSM-S	NK-12TSM-SS	1.1/2	95	75	25	38
	NK-16TSM-B	NK-16TSM-S	NK-16TSM-SS	2	108	98	29	49

<b>Plug with BSPT male thread</b>  	code (brass)	code (carbon steel)	code (AISI 304)	thread size [inch]	Lp [mm]	C [mm]	A [mm]	Bp [mm]
	NK-1TPM-B	-	NK-1TPM-SS	1/8	32	15.5	9	4.5
	NK-2TPM-B	NK-2TPM-S	NK-2TPM-SS	1/4	38	18	13	6.5
	NK-3TPM-B	NK-3TPM-S	NK-3TPM-SS	3/8	43	21	13	10
	NK-4TPM-B	NK-4TPM-S	NK-4TPM-SS	1/2	52	24	17	13
	NK-6TPM-B	NK-6TPM-S	NK-6TPM-SS	3/4	59	28	19	17
	NK-8TPM-B	NK-8TPM-S	NK-8TPM-SS	1	73	36	22	25
	NK-10TPM-B	NK-10TPM-S	NK-10TPM-SS	1.1/4	83	39	23	32
	NK-12TPM-B	NK-12TPM-S	NK-12TPM-SS	1.1/2	93	45	26	38
	NK-16TPM-B	NK-16TPM-S	NK-16TPM-SS	2	102	51	27	50

<b>Socket with BSPT female thread</b>  	code (brass)	code (carbon steel)	code (AISI 304)	thread size [inch]	Ls [mm]	D [mm]	A [mm]
	NK-1TSF-B	-	NK-1TSF-SS	1/8	27	17.5	9
	NK-2TSF-B	NK-2TSF-S	NK-2TSF-SS	1/4	32	24	13
	NK-3TSF-B	NK-3TSF-S	NK-3TSF-SS	3/8	35	28	13
	NK-4TSF-B	NK-4TSF-S	NK-4TSF-SS	1/2	42	35	17
	NK-6TSF-B	NK-6TSF-S	NK-6TSF-SS	3/4	48	45	19
	NK-8TSF-B	NK-8TSF-S	NK-8TSF-SS	1	59	58	22
	NK-10TSF-B	NK-10TSF-S	NK-10TSF-SS	1.1/4	64	69	23
	NK-12TSF-B	NK-12TSF-S	NK-12TSF-SS	1.1/2	71	75	23
	NK-16TSF-B	NK-16TSF-S	NK-16TSF-SS	2	80	98	27

<b>Plug with BSPT female thread</b>  	code (brass)	code (carbon steel)	code (AISI 304)	thread size [inch]	Lp [mm]	C [mm]	A [mm]	Bp [mm]
	NK-1TPF-B	-	NK-1TPF-SS	1/8	26	15.5	9	4.5
	NK-2TPF-B	NK-2TPF-S	NK-2TPF-SS	1/4	34	18	13	6.5
	NK-3TPF-B	NK-3TPF-S	NK-3TPF-SS	3/8	38	21	13	10
	NK-4TPF-B	NK-4TPF-S	NK-4TPF-SS	1/2	45	24	17	13
	NK-6TPF-B	NK-6TPF-S	NK-6TPF-SS	3/4	51	28	19	17
	NK-8TPF-B	NK-8TPF-S	NK-8TPF-SS	1	60	36	22	26
	NK-10TPF-B	NK-10TPF-S	NK-10TPF-SS	1.1/4	64	39	25	32
	NK-12TPF-B	NK-12TPF-S	NK-12TPF-SS	1.1/2	75	45	25	38
	NK-16TPF-B	NK-16TPF-S	NK-16TPF-SS	2	83	51	29	50

# INDUSTRIAL FITTINGS - quick release couplings


## NITTO KOHKI couplings

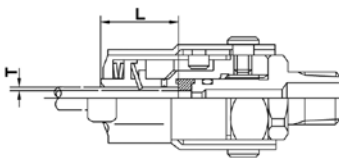


### PCV PIPE CUPLA

**Material:** Brass  
**Seal:** CR, Viton or HNBR  
**Working press.:** 46 bar (vacuum down to 0.13 Pa)  
**Working temp.:** From -20°C up to +80°C (CR)  
                           From -20°C up to +180°C (Viton)  
                           From -20°C up to +80°C (HNBR)

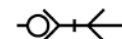
Push-in quick release couplings are designed to connect straight copper pipes with other parts of installation. Once a pipe is inserted into the coupling and clamped with the lever, a firm and tight double seal is created. A specified position works as a dust cap. Used with gaseous media (air, nitrogen, cooling agents - R12, R22, R134a freons with compression oil). Sealing must be selected according to the medium. Application: tank tightness pressure tests, emptying and filling of air conditioning systems, refrigerators, etc. The couplings are manufactured in Japan.

	pipe O.D.	male thread	code
	4 mm	1/4" BSPT 3/8" BSPT	NK-PCV400-2 NK-PCV400-3
3/16" (4.76 mm)		1/4" BSPT 3/8" BSPT cap	NK-PCV470-2 NK-PCV470-3 NK-PCV470-0
5 mm		1/4" BSPT 3/8" BSPT	NK-PCV500-2 NK-PCV500-3
6 mm		1/4" BSPT 3/8" BSPT cap	NK-PCV600-2 NK-PCV600-3 NK-PCV600-0
1/4" (6.35 mm)		1/4" BSPT 3/8" BSPT cap	NK-PCV630-2 NK-PCV630-3 NK-PCV630-0
8 mm		1/4" BSPT 3/8" BSPT cap	NK-PCV800-2 NK-PCV800-3 NK-PCV800-0
3/8" (9.52 mm)		1/4" BSPT 3/8" BSPT cap	NK-PCV950-2 NK-PCV950-3 NK-PCV950-0
10 mm		1/4" BSPT 3/8" BSPT	NK-PCV1000-2 NK-PCV1000-3
1/2" (12.7 mm)		3/8" BSPT cap	NK-PCV1270-3 NK-PCV1270-0
5/8" (15.88 mm)		3/8" BSPT cap	NK-PCV1590-3 NK-PCV1590-0

	min. pipe length L [mm]	min. wall thickness diameter [mm]	coupling type
	19	0.8	PCV400 PCV470 PCV500 PCV600 PCV630 PCV800 PCV950
20.5			PCV1000 PCV1270 PCV1590
30		1	

# INDUSTRIAL FITTINGS - quick release couplings

## GROMELLE couplings - SAFELINE series



### ISO 6150B type DN5.5, DN8

**Flow rate:** DN5.5 - 700 l/min., DN8 - 1590 l/min. at entrance pressure  $P_e = 6$  bar ( $\Delta p = 0.6$  bar)

**Working press.:** 16 bar

**Working temp.:** From -20°C up to +100°C

**Material:** The body of a socket - duralumin, connection - nickel-plated brass, push button - hardened steel, valve - zinc-plated steel, plug - zinc-plated steel, sealing - NBR.

**Description:** Compact and lightweight single shut-off coupling for air transfer. Equipped with button locking system, ensuring safe disconnection of a hose.

**Interchangeable:** All couplings with the design of a plug compliant with ISO 6150B and MIL C 4109 (DN5.5, DN8).

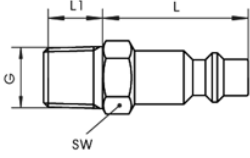
code	full flow DN	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
GR-GD1053615	5.5	1/4" BSP	19	64	26	12
GR-GD1053614	5.5	1/4" BSPT	17	66	26	13
GR-GD1053639	5.5	3/8" BSP	22	65	26	12
GR-GD1053638	5.5	3/8" BSPT	17	66	26	15
GR-GD1053613	5.5	1/2" BSP	27	67	26	14
GR-GD1053612	5.5	1/2" BSPT	22	65	26	17
GR-ID1096015	8	1/4" BSP	22	76	34	12
GR-ID1096014	8	1/4" BSPT	22	76	34	13
GR-ID1096039	8	3/8" BSP	22	76	34	12
GR-ID1096038	8	3/8" BSPT	22	76	34	15
GR-ID1096013	8	1/2" BSP	27	76	34	14
GR-ID1096012	8	1/2" BSPT	22	76	34	17

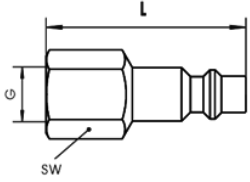
code	full flow DN	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
GR-GD1052614	5.5	1/4" BSP	17	76	26	-
GR-GD1052638	5.5	3/8" BSP	22	81	26	-
GR-GD1052612	5.5	1/2" BSP	27	83	26	-
GR-ID1097014	8	1/4" BSP	22	88	34	-
GR-ID1097038	8	3/8" BSP	22	91	34	-
GR-ID1097012	8	1/2" BSP	27	94	34	-

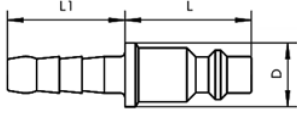
code	full flow DN	hose I.D.	SW [mm]	L [mm]	D [mm]	L1 [mm]
GR-GD1055667	5.5	6 mm	17	65	26	28
GR-GD1055678	5.5	7 mm	17	65	26	28
GR-GD1055689	5.5	8 mm	17	65	26	28
GR-GD1055690	5.5	9 mm	17	65	26	28
GR-GD1055601	5.5	10 mm	17	65	26	28
GR-ID1095678	8	7 mm	22	77	34	28
GR-ID1095689	8	8 mm	22	77	34	28
GR-ID1095690	8	9 mm	22	77	34	28
GR-ID1095601	8	10 mm	22	77	34	28

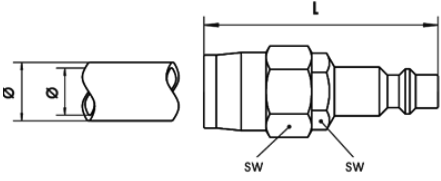
# INDUSTRIAL FITTINGS - quick release couplings

## GROMELLE couplings - SAFELINE series

	code	full flow DN	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	GR-GA0066318	5.5	1/8" BSPT	12	32	-	9
	GR-GA0066314	5.5	1/4" BSPT	14	32	-	13
	GR-GA0066338	5.5	3/8" BSPT	17	32	-	15
	GR-IA0090614	8	1/4" BSPT	16	34	-	13
	GR-IA0090638	8	3/8" BSPT	17	36	-	15
	GR-IA0090612	8	1/2" BSPT	23	40	-	17

	code	full flow DN	thread size	SW [mm]	L [mm]	D [mm]	L1 [mm]
	GR-GA0066214	5.5	1/4" BSP	17	44	-	-
	GR-GA0066238	5.5	3/8" BSP	21	44	-	-
	GR-IA0090714	8	1/4" BSP	17	50	-	-
	GR-IA0090738	8	3/8" BSP	21	50	-	-
	GR-IA0090712	8	1/2" BSP	26	53	-	-

	code	full flow DN	hose I.D.	SW [mm]	L [mm]	D [mm]	L1 [mm]
	GR-GA0066767	5.5	6 mm	-	28	14	26
	GR-GA0066778	5.5	7 mm	-	28	14	26
	GR-GA0066789	5.5	8 mm	-	28	14	26
	GR-GA0066790	5.5	9 mm	-	28	14	26
	GR-GA0066701	5.5	10 mm	-	28	14	26
	GR-IA0090978	8	7 mm	-	33	16	26
	GR-IA0090989	8	8 mm	-	33	16	26
	GR-IA0090990	8	9 mm	-	33	16	26
	GR-IA0090901	8	10 mm	-	33	16	26
	GR-IA0090912	8	11-12 mm	-	33	16	31

	code	full flow DN	hose I.D. x O.D.	SW [mm]	L [mm]	D [mm]	L1 [mm]
	GR-GA0066174	5.5	7x14 mm	16/19	56.5	-	-
	GR-GA0066184	5.5	8x14 mm	16/19	56.5	-	-
	GR-GA0066185	5.5	8x15 mm	16/19	56.5	-	-
	GR-GA0066196	5.5	9x16 mm	16/19	56.5	-	-

SAFELINE couplings are manufactured in compliance with ISO 4414 standard. A button locking system protects against accidental disconnection of a coupling and its effects, e.g. a hose pushed by the power of compressed air can hit its operator. The coupling is made of duralumin so it is very lightweight.

Manufactured to match three plug designs: ISO 6150B (DN5.5 i DN8), ISO 6150C (DN5.5, DN8 and DN11) and ARO 210 (DN5.5).

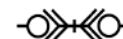
To disconnect a coupling:

- push the button, which will cause closing of the valve and venting of remnant air
- axial pressing of a plug releases it from the socket and enables disconnection of the coupling.



# INDUSTRIAL FITTINGS - quick release couplings

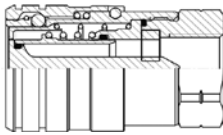
## GROMELLE couplings

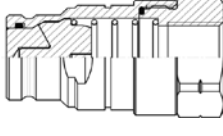


### MLDB (1/4" ÷ 1")

- Standard:** Manufacturer's standard  
**Applications:** Industrial (water, steam, fuel and oil, gas, chemicals)  
**Working press.:** Up to 25 bar (safety factor 4:1)  
**Material:** Special stainless steel AISI 316L  
**Seal:** Viton (from -20°C up to +200°C) - standard  
 EPDM (from -40°C up to +150°C) - standard  
**Advantages:** Kalrez (from -20°C up to +327°C) - option  
 Dry brake, made of the highest quality steel

Dry brake quick release couplings of a "flat face" type made of the highest purity steel (VIM-VAR vacuum casting). They feature very low air inclusion. Used mainly in industrial applications where cleanliness is crucial (nuclear, food, pharmaceutical industry, semiconductors manufacturing, perfumes). One hand operation. A safety ferrule lock prevents accidental disconnection. Easy service - the design allows easy cleaning and replacement of seals.

Socket	size [inch]	female thread [inch]	code	
			sockets (Viton seal)	sockets (EPDM seal)
	1/4	1/4 BSP	GR-ML2DB-S25FBS-V	GR- ML2DB-S25FBS-E
		1/4 NPT	GR- ML2DB-S25F-V	GR- ML2DB-S25F-E
	1/2	1/2 BSP	GR- ML4DB-S50FBS-V	GR- ML4DB-S50FBS-E
		1/2 NPT	GR- ML4DB-S50F-V	GR- ML4DB-S50F-E
	3/4	3/4 BSP	GR- ML6DB-S75FBS-V	GR- ML6DB-S75FBS-E
		3/4 NPT	GR- ML6DB-S75F-V	GR- ML6DB-S75F-E
	1	1 BSP	GR- ML8DB-S100FBS-V	GR- ML8DB-S100FBS-E
		1 NPT	GR- ML8DB-S100F-V	GR- ML8DB-S100F-E

Plug	size [inch]	female thread [inch]	code	
			plug (Viton seal)	plug (EPDM seal)
	1/4	1/4 BSP	GR- ML2DB-P25FBS-V	GR- ML2DB-P25FBS-E
		1/4 NPT	GR- ML2DB-P25F-V	GR- ML2DB-P25F-E
	1/2	1/2 BSP	GR- ML4DB-P50FBS-V	GR- ML4DB-P50FBS-E
		1/2 NPT	GR- ML4DB-P50F-V	GR- ML4DB-P50F-E
	3/4	3/4 BSP	GR- ML6DB-P75FBS-V	GR- ML6DB-P75FBS-E
		3/4 NPT	GR- ML6DB-P75F-V	GR- ML6DB-P75F-E
	1	1 BSP	GR- ML8DB-P100FBS-V	GR- ML8DB-P100FBS-E
		1 NPT	GR- ML8DB-P100F-V	GR- ML8DB-P100F-E

### Sealings sets

size [inch]	code of socket seal		code of plug seal	
	Viton	EPDM	Viton	EPDM
1/4	GR-ML2DB-SG-V	GR-ML2DB-SG-E	GR-ML2DB-PG-V	GR-ML2DB-PG-E
1/2	GR-ML4DB-SG-V	GR-ML4DB-SG-E	GR-ML4DB-PG-V	GR-ML4DB-PG-E
3/4	GR-ML6DB-SG-V	GR-ML6DB-SG-E	GR-ML6DB-PG-V	GR-ML6DB-PG-E
1	GR-ML8DB-SG-V	GR-ML8DB-SG-E	GR-ML8DB-PG-V	GR-ML8DB-PG-E

### Working parameters

size [inch]	working pressure [bar]	flow at Δp = 3 bar [l/min]	air inclusion [ml]
1/4	25	27	0.002
1/2	25	140	0.012
3/4	25	218	0.03
1	25	393	0.15

## INDUSTRIAL FITTINGS - quick release couplings

### HANSEN BEVERAGE PRODUCTS couplings for food industry



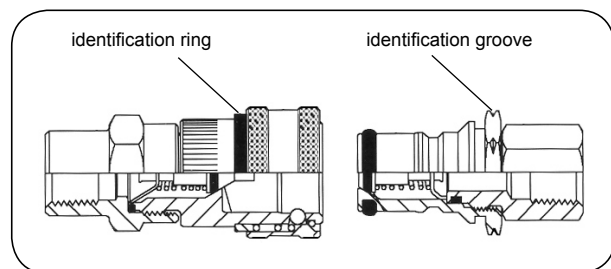
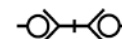
TUBES INTERNATIONAL® supplies HANSEN BEVERAGE PRODUCTS couplings. This name stands for a group of couplings that are widely used in food and pharmaceutical industry. They are used by leading dairy producers. The couplings are usually made of acid-resistant steel, can be used for gas and fluid (depending on the series). Spare parts for these couplings (valves, seals, springs etc.) are also available in our offer. For proper coupling selection, please try to specify its application precisely and contact Sales or Technical Department of TUBES INTERNATIONAL®



# INDUSTRIAL FITTINGS - quick release couplings

## HANSEN BEVERAGE PRODUCTS

couplings for food industry

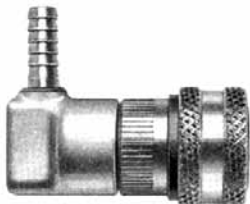



### 2HG / 2HL series

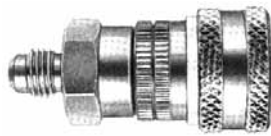
Working press.: 15 bar


Working temp.: Up to +130°C

All parts in contact with the medium are made of acid-resistant steel. The couplings are available in two versions: for gases and for fluids. These two versions are not interchangeable (different plug dimension), to avoid wrong connection. Easy to distinguish. Couplings for gases - white identification ring on a socket and a groove on the hexagon of a plug. Couplings for fluids - black identification ring on a coupling and a lack of groove on the hexagon of a plug.

	code	hose I.D. [inch]	medium	description
	HB-2HGRB	1/4	gases	90° socket with hose tail.
	HB-2HLRB	1/4	liquids	


	code	hose I.D. [inch]	medium	description
	HB-2HGBNB	1/4	gases	Socket with hose tail.
	HB-2HGDNB	3/8		
	HB-2HLBNB	1/4	liquids	
	HB-2HLDNB	3/8		


	code	thread size [inch]	medium	description
	HB-2HG720	7/16-20	gases	Socket with an UNF male thread (90° cone).
	HB-2HL720	7/16-20	liquids	


	code	thread size [inch]	medium	description
	HB-2HGLLRA720	7/16-20	gases	90° socket with an UNF male thread (90° cone)..
	HB-2HLLRA720	7/16-20	liquids	

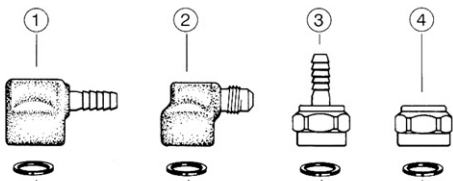
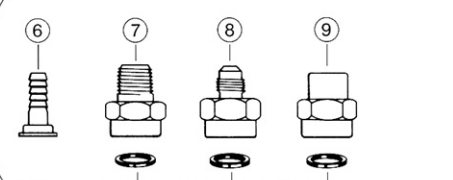
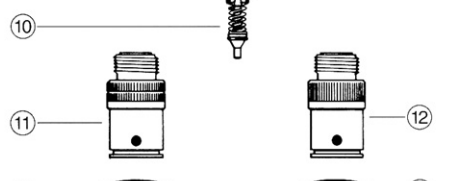
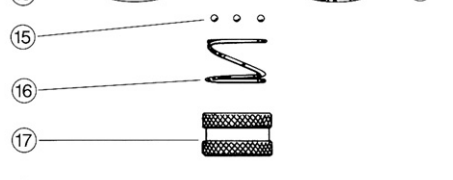
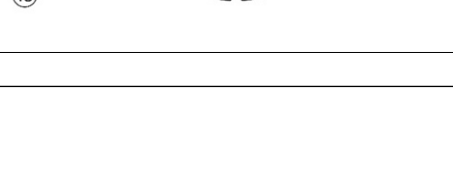
# INDUSTRIAL FITTINGS - quick release couplings

## HANSEN BEVERAGE PRODUCTS couplings for food industry

	code	thread size [inch]	medium	description
	HB-2HG15	1/4	gases	Socket with a NPT male thread.
	HB-2HG20	3/8		
	HB-2HL15	1/4	liquids	
	HB-2HL20	3/8		


	code	thread size [inch]	medium	description
	HB-2HG16	1/4	gases	Socket with a NPT female thread.
	HB-2HL16	1/4	liquids	


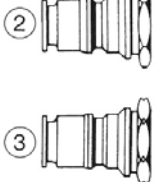
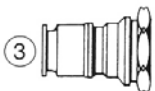

	code	medium	description
	HB-LN2HGA	gases	Socket without valve.
	HB-LN2HGB		Socket with a valve.
	HB-LN2HGC		Socket with a valve and seal.
	HB-LN2HLA	liquids	Socket without valve.
	HB-LN2HLB		Socket with a valve.
	HB-LN2HLC		Socket with a valve and seal.


2-HG and 2-HL socket components			
pic.	code	description	
	1	HB-SE2HGLRB	90° connection with 1/4" hose tail
	2	HB-SE2HGLLLRA720	90° connection with male thread 7/16"-20 UNF
	3	HB-SE2HGLBNB	1/4" hose tail + nut
	4	HB-SE2HGLDN	Nut for a fitting with hose tail
	5	HB-W2HGL1	Rubber seal
	6	HB-SE2HGLBNB1	1/4" hose tail
		HB-SE2HGLDNB1	3/8" hose tail
	7	HB-SE2HGL15	Connection with 1/4" NPT male thread x 11/16-18 UNF female thread
	7	HB-SE2HGL20	Connection with 3/8" NPT male thread x 11/16-18 UNF female thread
		HB-SE2HGL720	Connection with 7/16-20 UNF male thread x 11/16-18 UNF female thread
	8	HB-SE2HGL16	Connection with 1/4" NPT female thread x 11/16-18 UNF female thread
	9	HB-4BSVAB	Valve
	10	HB-2HG01A	Socket body for gases
	11	HB-2HL01A	Socket body for liquids
	12	HB-2HGL01B1	White identification ring (gases)
	13	HB-2HGL01B2	Black identification ring (liquids)
	14	HB-2104A302	Locking balls (3 pieces)
	15	HB-3S05	Ferrule spring
	16	HB-2HGL02	Ferrule
	17	HB-3S06	Retaining ring


# INDUSTRIAL FITTINGS - quick release couplings


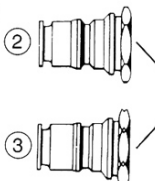
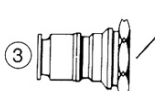


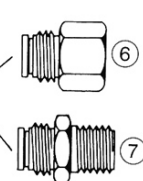
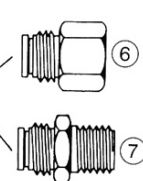
## HANSEN BEVERAGE PRODUCTS couplings for food industry

	code	thread size [inch]	medium	description
	HB-2KGF	9/16-18 UNF	gases	Plug.
	HB-2KLF	5/8-18 UNF	liquids	

2-KG-F and 2-KL-F plug components		
pic.	code	description
	HB-902-9-292	O-ring.
	HB-2KL01F	Plug body 5/8-18 UNF female thread (liquids)
	HB-2KG01F	Plug body 9/16-18 UNF female thread (gases)
	HB-VA2KGLFA	Valve


	code	thread size [inch]	medium	description
	HB-2KGF16	1/4 NPT	gases	Plug with female thread.
	HB-2KGF720	7/16-20 UNF		
	HB-2KLF16	1/4 NPT	liquids	
	HB-2KLF720	7/16-20 UNF		


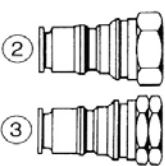
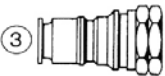


	code	thread size [inch]	medium	description
	HB-2KGF15	1/4 NPT	gases	Plug with male thread.
	HB-2KGF20	3/8 NPT		
	HB-2KLF15	1/4 NPT	liquids	
	HB-2KLF20	3/8 NPT		


2-KG-F and 2-KL-F plug components		
pic.	code	description
	HB-9029292	O-ring
	HB-2KL01F	Plug body 5/8-18 UNF female thread (liquids)
	HB-2KG01F	Plug body 9/16-18 UNF female thread (gases)
	HB-VA2KGLFA	Valve
	HB-9027292	O-ring
	HB-PE2KGF1601	Connection with 1/4" NPT female thread (plug 2KG-F16, liquids)
	HB-PE2KLF1601	connection with 1/4" NPT female thread (plug 2KG-F16, gases)
	HB-PE2KGF72001	Connection with 7/16-20 UNF female thread (plug 2KG-F720, liquids)
	HB-PE2KLF72001	Connection with 7/16-20 UNF female thread (plug 2KG-F720, gases)
	HB-PE2KGF1501	Connection with 1/4" NPT male thread (plug 2KG-F15, liquids)
	HB-PE2KLF1501	Connection with 1/4" NPT male thread (plug 2KG-F15, gases)
	HB-PE2KGF2001	Connection with 3/8" NPT male thread (plug 2KG-F20, liquids)
	HB-PE2KLF2001	Connection with 3/8" NPT male thread (plug 2KG-F20, gases)


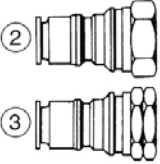
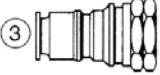

# INDUSTRIAL FITTINGS - quick release couplings

## HANSEN BEVERAGE PRODUCTS couplings for food industry

	code	thread size [inch]	medium	description
	HB-2KGC	11/16-18 UNF	gases	Plug without connection part with plastic insert.
	HB-2KLC	3/4-18 UNF	liquids	

2-KG-C and 2-KL-C plug components		
pic.	code	description
	HB-902-9-292	O-ring.
	HB-2KL01C	Plug body with a fem. thread 3/4-18 UNF (liquids).
	HB-2KG01C	Plug body with a fem. thread 11/16-18 UNF (gases).
	HB-PVA372381	Valve.
	HB-NPI3723	Plastic insert.

	code	thread size [inch]	medium	description
	HB-2KGCRN	19/32-18 UNF	gases	Plug without connection part.
	HB-2KLCRN	19/32-18 UNF	liquids	

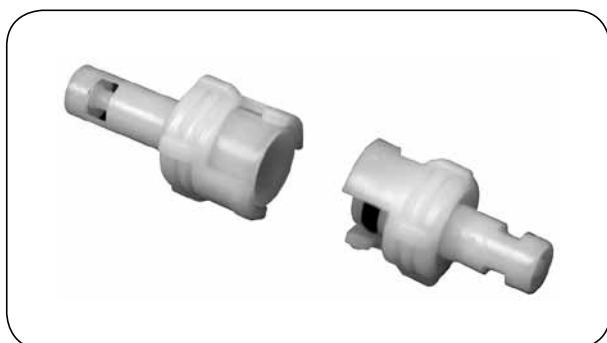
2-KG-CRN and 2-KL-CRN plug components		
pic.	code	description
	HB-902-9-292	O-ring.
	HB-2KG01CRN	Plug body with a fem. thread 19/32-18 UNF (gases).
	HB-2KL01CRN	Plug body with a fem. thread 19/32-18 UNF (liquids).
	HB-VA2KGLCRN	Valve.

# INDUSTRIAL FITTINGS - quick release couplings

## CPC - plastic couplings

CPC quick release plastic couplings are designed for general industry, biopharmaceutical, medical, chemical, food and packaging application. A version with an automatic shut-off valve prevents leaks and thus increases safety of its operator. A wide choice of materials enables selection of the quick release coupling for almost any application. One hand operation with an audible click confirming secure connection. A variety of coupling versions allows attachment to threaded connection, in-line, hose systems, panel mounting, etc. A product line of CPC couplings makes a total of over 4000 items. They are available as individual male or female parts with different connections or as ready-to-use sets to be fit into a hose (so called „Line-In“).

It is recommended to use CPC quick release couplings with hoses listed in TYGON® HOSES section.



### SMC series DN1.2

**Material:** Acetal (O-ring NBR)  
Polypropylene (O-ring EPDM)  
Polycarbonate (O-ring NBR)

**Working press.:** Up to 6.9 bar

**Working temp.:** From -40°C up to +82°C (acetal)  
From 0°C up to +82°C (polypropylene)  
From -40°C up to +121°C (polycarbonate)

Miniature couplings are designed for ink printing installations, blood, coolants, gas chromatography, etc. It is enough to twist two parts of the coupling against each other to connect them. In addition the coupling allows some rotation of the hose when connected. This feature prevents kinking and accidental disconnection. The couplings made of acetal are available in black colour as an option.

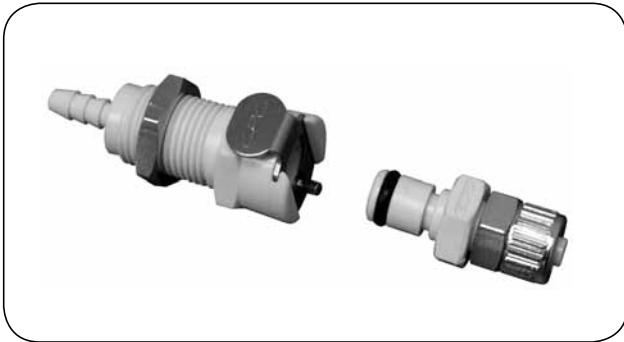
picture		description		code		
				acetal	polypropylene	polycarbonate
	1	socket	with 1/8" NPT male thread	CC-SMX-01-AC	CC-SMX-01-PP	-
	2		for 1/16" hose	CC-SMX-02-AC	CC-SMX-02-PP	CC-SMX-02-PC
	3		for 1/8" hose	CC-SMX-03-AC	CC-SMX-03-PP	CC-SMX-03-PC
	4		panel mount for 1/16" hose	CC-SMX-04-AC	CC-SMX-04-PP	-
	5		panel mount for 1/8" hose	CC-SMX-05-AC	CC-SMX-05-PP	-
	6	plug	for 1/16" hose	CC-SMX-06-AC	CC-SMX-06-PP	CC-SMX-06-PC
	7		for 1/8" hose	CC-SMX-07-AC	CC-SMX-07-PP	CC-SMX-07-PC
	8		panel mount for 1/16" hose	CC-SMX-08-AC	CC-SMX-08-PP	-
	9		panel mount for 1/8" hose	CC-SMX-09-AC	CC-SMX-09-PP	-
	10	in-line set	1/16"	CC-SMX-10-AC	CC-SMX-10-PP	CC-SMX-10-PC
	11		1/8"	CC-SMX-11-AC	CC-SMX-11-PP	CC-SMX-11-PC

#### NOTE!

The codes given above apply to versions without valves. Couplings made of acetal only available with the valves. A code example of the version with the valve e.g. CC-SMV-10-AC.

# INDUSTRIAL FITTINGS - quick release couplings

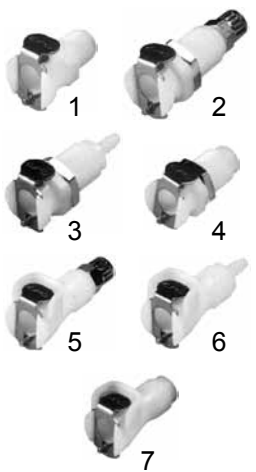

## CPC - plastic couplings



### PMC series DN3.2

**Material:** Acetal (O-ring NBR)  
Polypropylene (O-ring EPDM)  
**Working press.:** Up to 8.3 bar  
**Working temp.:** From -40°C up to +82°C (acetal)  
From 0°C up to +71°C (polypropylene)

Small quick release couplings designed for gas detection, medical devices, chemical analysers, ink printing, components of optical equipment, etc. Their specific design (there are no locking balls or ferrules) allows easier and firmer one hand connection and disconnection. An audible click confirms secure connection. Also available with BSPT male thread.

picture		description	code	
			acetal	polypropylene
	1	with 1/8" NPT male thread	CC-PMV-01-AC	CC-PMV-01-PP
	2	with 1/4" NPT male thread	CC-PMV-02-AC	CC-PMV-02-PP *
	3	panel mount for 4x2 hose + nut	CC-PMV-03-AC	-
		panel mount for 4x2.5 hose + nut	CC-PMV-04-AC	-
	4	panel mount for 6.3x4.3 hose + nut	CC-PMV-05-AC	CC-PMV-05-PP
		panel mount for 1/16" hose	CC-PMV-06-AC	CC-PMV-06-PP
	5	panel mount for 1/8" hose	CC-PMV-07-AC	CC-PMV-07-PP
		panel mount for 3/16" hose	CC-PMV-08-AC	-
	6	panel mount for 1/4" hose	CC-PMV-09-AC	CC-PMV-09-PP
		panel mount with 10-32 UNF female thread	CC-PMV-10-AC	-
	7	hose tail for 4x2 hose (+ nut)	CC-PMV-11-AC	-
		hose tail for 4x2.5 hose (+ nut)	CC-PMV-12-AC	-
	8	hose tail for 6.3x4.3 hose (+ nut)	CC-PMV-14-AC	CC-PMV-14-PP
		for 1/16" hose tail	CC-PMV-15-AC	CC-PMV-15-PP
	9	for 1/8" hose tail	CC-PMV-16-AC	CC-PMV-16-PP
		for 3/16" hose tail	CC-PMV-17-AC	-
	10	for 1/4" hose tail	CC-PMV-18-AC	CC-PMV-18-PP
		with 10-32 UNF female thread	CC-PMV-19-AC	-
	1	with 1/8" NPT male thread	CC-PMV-20-AC	CC-PMV-20-PP
	2	with 1/4" NPT male thread	CC-PMV-21-AC	-
	3	panel mount for 6.3x4.3 hose + nut	CC-PMV-22-AC	-
		panel mount for 1/16" hose	CC-PMV-23-AC	-
	4	panel mount for 1/8" hose	CC-PMV-24-AC	-
		panel mount for 3/16" hose	CC-PMV-25-AC	-
	5	panel mount 1/4" hose	CC-PMV-26-AC	-
		hose tail for 4x2 hose (+ nut)	CC-PMV-27-AC	-
	6	hose tail for 4x2.5 hose (+ nut)	CC-PMV-28-AC	-
		hose tail for 6.3x4.3 hose (+ nut)	CC-PMV-29-AC	CC-PMV-29-PP
	7	hose tail for 9.5x6.3 hose (+ nut)	CC-PMV-30-AC	-
		for 1/16" hose	CC-PMV-31-AC	CC-PMV-31-PP
	8	for 1/8" hose	CC-PMV-32-AC	CC-PMV-32-PP
		for 3/16" hose	CC-PMV-33-AC	-
	9	for 1/4" hose	CC-PMV-34-AC	CC-PMV-34-PP
		with 10-32 UNF female thread	CC-PMV-35-AC	-
	10	90° elbow for 4x2.5 hose (+ nut)	- **	-
		90° elbow for 6.3x4.3 hose (+ nut)	CC-PMV-37-AC	CC-PMV-37-PP *
	11	90° elbow for 1/8" hose	CC-PMV-38-AC	CC-PMV-38-PP
		90° elbow for 1/4" hose	CC-PMV-39-AC	CC-PMV-39-PP

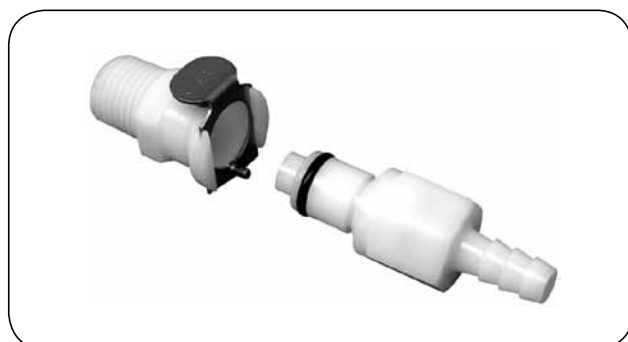
#### NOTE!

The codes given above apply to versions with valves.

A code example of the version without the valve e.g.: CC-PMX-10-AC \* - always valved  
\*\* - always non-valved

# INDUSTRIAL FITTINGS - quick release couplings

## CPC - plastic couplings



## PLC series DN6.3

**Material:** Acetal (O-ring NBR)  
Polypropylene (O-ring EPDM)  
**Working press.:** Up to 8.3 bar  
**Working temp.:** From -40°C up to +82°C (acetal)  
From 0°C up to +71°C (polypropylene)

Middle size quick release couplings designed for washing systems, deionized water filtration, industrial machines, leak detection, etc. Their specific design (there are no locking balls or ferrules) allows easier and firmer one hand connection and disconnection. An audible click confirms secure connection. Also available with BSPT male thread.

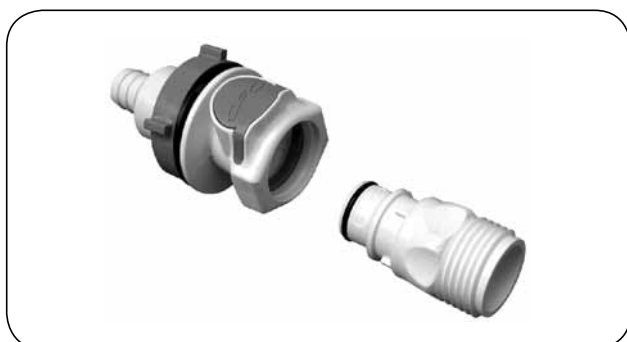
picture		description		code	
				acetal	polypropylene
	1	socket	with 1/4" NPT male thread	CC-PLV-01-AC	CC-PLV-01-PP
	2		with 3/8" NPT male thread	CC-PLV-02-AC	CC-PLV-02-PP *
	3		panel mount for 6.3x4.3 hose + nut	CC-PLV-03-AC	-
	4		panel mount for 8x6 hose + nut	CC-PLV-04-AC	-
	5		panel mount for 9.5x6.3 hose + nut	CC-PLV-05-AC	CC-PLV-05-PP
	6		panel mount for 10x8 hose + nut	CC-PLV-06-AC	-
	7		panel mount for 1/4" hose	CC-PLV-07-AC	CC-PLV-07-PP
	8		panel mount for 5/16" hose	CC-PLV-08-AC	-
	9		panel mount for 3/8" hose	CC-PLV-09-AC	CC-PLV-09-PP
	10		push-in panel mount for 1/4" hose	CC-PLV-10-AC	-
	11		hose tail for 6.3x4.3 hose (+ nut)	CC-PLV-11-AC	-
	12		hose tail for 8x6 hose (+ nut)	CC-PLV-12-AC	-
	13		hose tail for 9.5x6.3 hose (+ nut)	CC-PLV-13-AC	CC-PLV-13-PP
	14		hose tail for 10x8 hose (+ nut)	CC-PLV-14-AC	-
	15		with 1/4" hose tail	CC-PLV-15-AC	CC-PLV-15-PP
	16		with 5/16" hose tail	CC-PLV-16-AC	-
	17		with 3/8" hose tail	CC-PLV-17-AC	CC-PLV-17-PP
	18		push-in for 1/4" hose (O.D.)	CC-PLV-18-AC	-
	19		push-in for 3/8" hose (O.D.)	CC-PLV-19-AC	-
	20	plug	for 9.5x6.3 hose (+ plastic nut)	-	CC-PLV-20-PP *
	21		for 12.7x9.5 hose (+ plastic nut)	-	CC-PLV-21-PP *
	22		with 1/4" NPT male thread	CC-PLV-22-AC	CC-PLV-22-PP
	23		with 3/8" NPT male thread	CC-PLV-23-AC	-
	24		panel mount for 6.3x4.3 hose + nut	CC-PLV-24-AC	-
	25		panel mount for 8x6 hose + nut	CC-PLV-25-AC	-
	26		panel mount for 9.5x6.3 hose + nut	CC-PLV-26-AC	-
	27		panel mount for 10x8 hose + nut	CC-PLV-27-AC	-
	28		panel mount for 1/4" hose	CC-PLV-28-AC	CC-PLV-28-PP
	29		panel mount for 5/16" hose	CC-PLV-29-AC	-
	30		panel mount for 3/8" hose	CC-PLV-30-AC	CC-PLV-30-PP
	31		push-in panel mount for 1/4" hose	CC-PLV-31-AC	-
	32		hose tail for 6.3x4.3 hose (+ nut)	CC-PLV-32-AC	-
	33		hose tail for 8x6 hose (+ nut)	CC-PLV-33-AC	-
	34		hose tail for 9.5x6.3 hose (+ nut)	CC-PLV-34-AC	CC-PLV-34-PP
	35		hose tail for 10x8 hose (+ nut)	CC-PLV-35-AC	-
	36		for 1/4" hose tail	CC-PLV-36-AC	CC-PLV-36-PP
	37		for 5/16" hose tail	CC-PLV-37-AC	-
	38		for 3/8" hose tail	CC-PLV-38-AC	CC-PLV-38-PP
	39		push-in for 1/4" hose (O.D.)	CC-PLV-39-AC	-
	40		push-in for 3/8" hose (O.D.)	CC-PLV-40-AC	-
	41		90° elbow for 9.5x6.3 hose (+ nut)	CC-PLV-41-AC	CC-PLV-41-PP
	42		90° elbow for 1/4" hose	CC-PLV-42-AC	CC-PLV-42-PP
	43		90° elbow for 1/8" hose	CC-PLV-43-AC	CC-PLV-43-PP
	44		for 9.5x6.3 hose (+ plastic nut)	-	CC-PLV-44-PP *
	45		for 12.7x9.5 hose (+ plastic nut)	-	CC-PLV-45-PP *

### Note!

- The codes given above apply to versions with valves. A code example of the version without the valve e.g.: CC-PLX-10-AC (\* - always valved).
- Versions for application in food and pharmaceutical industry or medical equipment are also available.

# INDUSTRIAL FITTINGS - quick release couplings

## CPC - plastic couplings



### HFC series DN12.7

**Material:** Polypropylene (up to 4.2 bar)  
 Polysulfone (up to 8.6 bar)  
 Polysulfone UV (up to 8.6 bar)

**Seal:** EPDM

**Working temp.:** From 0°C up to +71°C (polypropylene)  
 From -40°C up to +138°C (polysulfone)

Couplings designed for water, chemical, and pneumatic installations, etc. They are very lightweight in comparison with traditional heavy couplings with locking balls and ferrule. An ergonomic design and a large push button make it easy to grip and operate. An efficient valve design ensures high flow rates and minimum spillage. In addition the coupling allows some rotation of the connected hose. This feature prevents kinking and accidental disconnection during use. Application: chemical photographic processing, battery and accumulator filling installations, spraying equipment, pneumatic installations and antifreeze fluid systems, etc.

HFC couplings are also available: with valve inner parts made of Hastelloy, with BSPT male thread or 3/4" GHT male thread. The couplings made of polysulfone are highly resistant to chemicals and mechanical impact. Can be sterilized in an autoclave. UV version is resistant to ultraviolet radiation.

picture		description		code		
				polypropylene	polysulfone	polysulfone UV
	1	socket	with 3/8" NPT male thread	CC-HFV-01-PP	CC-HFV-01-PS	-
	2		with 1/2" NPT male thread	CC-HFV-02-PP	CC-HFV-02-PS	CC-HFV-02-PSU
	3		with 3/4" NPT male thread	CC-HFV-03-PP	CC-HFV-03-PS	-
	4		with 3/4" GHT female thread	-	CC-HFV-04-PS	CC-HFV-04-PSU
	5		with 3/4" BSP female thread	-	CC-HFV-05-PS	CC-HFV-05-PSU
	6		panel mount for 3/8" hose	CC-HFV-06-PP	CC-HFV-06-PS	CC-HFV-06-PSU*
	7		panel mount for 1/2" hose	CC-HFV-07-PP	CC-HFV-07-PS	CC-HFV-07-PSU*
	8		panel mount for 5/8" hose	CC-HFV-08-PP	CC-HFV-08-PS	CC-HFV-08-PSU*
	9		panel mount for 3/4" hose	CC-HFV-09-PP	CC-HFV-09-PS	CC-HFV-09-PSU*
	10		panel mount for 3/8" hose (O.D.)	CC-HFV-10-PP	-	-
	11		panel mount for 1/2" hose (O.D.)	CC-HFV-11-PP	-	-
	12		for 3/8" hose	CC-HFV-12-PP	CC-HFV-12-PS	CC-HFV-12-PSU
	13		for 1/2" hose	CC-HFV-13-PP	CC-HFV-13-PS	CC-HFV-13-PSU
	14		for 5/8" hose	CC-HFV-14-PP	CC-HFV-14-PS	CC-HFV-14-PSU
	15		for 3/4" hose	CC-HFV-15-PP	CC-HFV-15-PS	CC-HFV-15-PSU
	16		for 3/8" hose (O.D.)	CC-HFV-16-PP	-	-
	17		for 1/2" hose (O.D.)	CC-HFV-17-PP	-	-
	1	plug	with 3/8" NPT male thread	CC-HFV-18-PP	CC-HFV-18-PS	-
	2		with 1/2" NPT male thread	CC-HFV-19-PP	CC-HFV-19-PS	CC-HFV-19-PSU
	3		with 3/4" NPT male thread	CC-HFV-20-PP	CC-HFV-20-PS	-
	4		for 3/8" hose	CC-HFV-21-PP	CC-HFV-21-PS	CC-HFV-21-PSU
	5		for 1/2" hose	CC-HFV-22-PP	CC-HFV-22-PS	CC-HFV-22-PSU
	6		for 5/8" hose	CC-HFV-23-PP	CC-HFV-23-PS	CC-HFV-23-PSU
	7		for 3/4" hose	CC-HFV-24-PP	CC-HFV-24-PS	CC-HFV-24-PSU
	8		for 3/8" hose (O.D.)	CC-HFV-25-PP	-	-
	9		for 1/2" hose (O.D.)	CC-HFV-26-PP	-	-
	10		90° elbow for 3/8" hose	CC-HFV-27-PP	CC-HFV-27-PS	-
	11		90° elbow for 1/2" hose	CC-HFV-28-PP	CC-HFV-28-PS	-
	12		with 3/4" GHT female thread	-	CC-HFV-29-PS	CC-HFV-29-PSU
	13		with 3/4" BSP female thread	-	CC-HFV-30-PS	CC-HFV-30-PSU

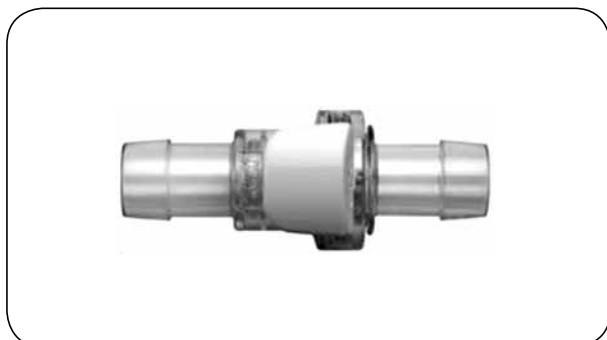
Note!

- The codes given above apply to versions with valves. A code example of the version without the valve e.g.: CC-HFX-10-PP (\* - always valved).
- Versions for application in food and pharmaceutical industry or medical equipment are also available.



# INDUSTRIAL FITTINGS - quick release couplings

## CPC - plastic couplings







### MPC series DN6.4 DN9.5

**Material:** Polycarbonate (silicone O-ring)  
Polysulfone (silicone O-ring)  
ABS (silicone O-ring)


**Working press.:** Up to 4 bar

**Working temp.:** From -40°C up to +120°C (polycarbonate)  
From -40°C up to +150°C (polysulfone)  
From -40°C up to +70°C (ABS)

Quick release couplings for medical application. The couplings allow for some rotation of the connected hose thus preventing its potential kinking. Easy to operate (even in rubber gloves). The couplings made of polycarbonate and polysulfone are equipped with locking ferrules that protect against accidental disconnections. Meet USP Class VI requirements. Sterilized in an autoclave at +120°C for 30 min up to 10 cycles (polycarbonate), +130°C for 60 min up to 25 cycles (polysulfone) or gamma rays (up to 50 kGy).

picture	description		code		
			polycarbonate	polysulfone	ABS
	socket	for 1/4" hose without locking ferrule	CC-MPC-01-PW	CC-MPC-01-PS	CC-MPC-01-AB
		for 1/4" hose with locking ferrule	CC-MPC-02-PW	CC-MPC-02-PS	CC-MPC-02-AB
		for 3/8" hose	CC-MPC-03-PW	CC-MPC-03-PS	CC-MPC-03-AB
		for 3/8" hose with locking ferrule	CC-MPC-04-PW	CC-MPC-04-PS	CC-MPC-04-AB
	plug	for 1/4" hose	CC-MPC-05-PW	CC-MPC-05-PS	CC-MPC-05-AB
		for 3/8" hose	CC-MPC-06-PW	CC-MPC-06-PS	CC-MPC-06-AB
	socket cup		CC-MPC-07-PW	CC-MPC-07-PS	-
	plug cap	without locking ferrule	CC-MPC-08-PW	CC-MPC-08-PS	-
		with locking ferrule	CC-MPC-09-PW	CC-MPC-09-PS	-

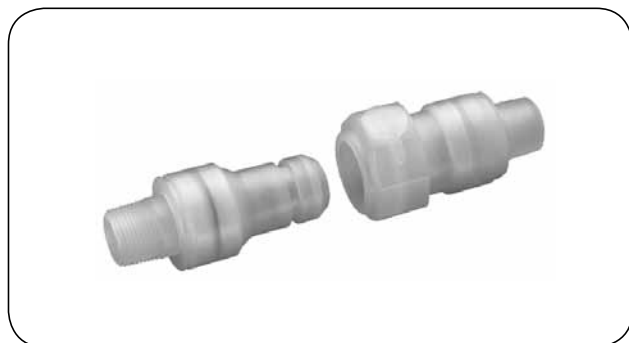
SANQUIK adapters with TRICLOVER flanges are designed for quick connection of fixed installations with MPC type couplings. Sterilized in an autoclave.

	code	for coupling type	installation DN [inch]	flange diameter [mm]	length [mm]	description
	CC-SQMPC-01	MPC	3/4	22.6	35.3	
	CC-SQMPC-02	MPC	1.1/2	50.3	38.1	
	CC-SQMPX-01	MPX	3/4	22.6	39.1	
	CC-SQMPX-02	MPX	1	50.3	38.1	
	CC-SQMPX-03	MPX	1.1/2	50.3	38.1	

Material: AISI 316L.  
O-ring: silicone (USP Class VI).  
Working press.: 4 bar.  
Working temp.: from -40°C up to +150°C.

## INDUSTRIAL FITTINGS - quick release couplings



### CPC - plastic couplings



#### CQG 06 series

**Material:** Polypropylene  
**Spring:** Hastelloy  
**Seal:** Viton  
**Working press.:** Up to 5 bar  
**Working temp.:** From -5°C up to +65°C  
**Leakage:** <0.1 ml

“Non-spill” quick release couplings for laboratory applications. Feature broad chemical resistance and high flow rate. Easy to connect/disconnect, even under pressure.

picture	description		code
	socket	with hose tail for 3/8" hose	CC-CQG-01
		with hose tail for 1/2" hose	CC-CQG-02
		with hose tail for 3/4" hose	CC-CQG-03
		with 1/2" NPT male thread	CC-CQG-04
	plug	with hose tail for 3/8" hose	CC-CQG-05
		with hose tail for 1/2" hose	CC-CQG-06
		with hose tail for 3/4" hose	CC-CQG-07
		with 3/8" NPT male thread	CC-CQG-08
		with 1/2" NPT male thread	CC-CQG-09
		with 3/4" NPT male thread	CC-CQG-10
	adapter for panel mount assembly		CC-CQG-11

## INDUSTRIAL FITTINGS - valves

### Globe valves



#### Globe valve 2028 type

**Body material:** AISI 316 steel  
**Ball material:** AISI 316 steel  
**Handle material:** Aluminium  
**Stem seal:** PTFE  
**Connection:** BSP female thread  
**Working temp.:** From -20°C up to +200°C

A general purpose globe valve intended for application in industrial installations. The valve can be used to control or throttle flow. Working pressure depends on working temperature.

code	DN [mm]	thread size [inch]	working pressure [bar]
HT-2028-08	8	1/4	10
HT-2028-10	10	3/8	10
HT-2028-15	15	1/2	10
HT-2028-20	20	3/4	10
HT-2028-25	25	1	10
HT-2028-32	32	1.1/4	10
HT-2028-40	40	1.1/2	10
HT-2028-50	50	2	10

### Ball valves



#### Ball valve 5600 type

**Body material:** Nickel-plated brass  
**Ball material:** Chrome-plated brass  
**Handle material:** Aluminium  
**Ball seal:** PTFE  
**Stem seal:** NBR  
**Working temp.:** From -20°C up to +110°C

A general purpose ball valve (tap) with hose tail, intended for application in industrial installations. Suitable for water, chemicals, petrochemical products, etc. Working pressure depends on working temperature.

code	flow diameter [mm]	thread size [inch]	hose tail size [mm]	working pressure [bar]
RV-5600-10	10	3/8	15	16
RV-5600-13	10	1/2	15	16
RV-5600-19	12.5	3/4	20	16
RV-5600-25	15	1	26	16
RV-5600-32	25	1.1/4	26	16

## INDUSTRIAL FITTINGS - valves

### Ball valves



#### Mini ball valve 6400/6410 type

**Body material:** Nickel-plated brass  
**Ball material:** Chrome-plated brass  
**Handle material:** Polyamide (PA 66)  
**Ball seal:** PTFE  
**Stem seal:** NBR  
**Working temp.:** From -20°C up to +80°C

A general purpose mini ball valve designed for industrial installations. Used for air, gases, water, chemicals, petrochemical products, etc. Vacuum 0.9 bar.

code	flow diameter [mm]	length [mm]	thread size [inch]	working pressure [bar]
6400 type (2 x BSP female thread)				
AI-6400-02	5.5	35	1/8	20
AI-6400-04	5.5	37	1/4	20
AI-6400-06	8	42	3/8	20
AI-6400-08	10	49	1/2	20
AI-6400-12	14	58	3/4	20
6410 type (BSP male / female thread)				
AI-6410-02	5.5	34	1/8	20
AI-6410-04	5.5	35	1/4	20
AI-6410-06	8	39	3/8	20
AI-6410-08	10	45	1/2	20
AI-6410-12	14	52	3/4	20



#### Mini ball valve 4010/4011 type

**Body material:** Nickel-plated brass  
**Ball material:** Chrome-plated brass  
**Handle material:** Aluminium  
**Ball seal:** PTFE  
**Stem seal:** NBR  
**Working temp.:** From -10°C up to +90°C

A general purpose mini ball valve designed for industrial installations. Used for air, gases, water, chemicals, petrochemical products, etc.

code	flow diameter [mm]	length [mm]	thread size [inch]	working pressure [bar]
4010 type (2 x BSP female thread)				
RV-4010-06	8	40	1/4	10
RV-4010-10	8	40	3/8	10
RV-4010-13	10	44	1/2	10
RV-4010-19	14	48	3/4	10
4011 type (BSP male / female thread)				
RV-4011-06	8	39	1/4	10
RV-4011-10	8	39	3/8	10
RV-4011-13	10	43	1/2	10
RV-4011-19	14	50	3/4	10

## INDUSTRIAL FITTINGS - valves

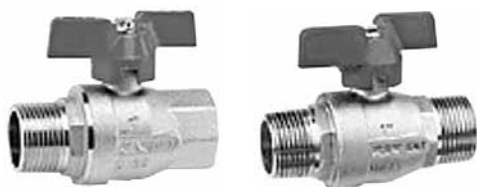


### Ball valve 4174/4334 type

**Body material:** Nickel-plated brass  
**Ball material:** Chrome-plated brass  
**Handle material:** Aluminium  
**Ball seal:** PTFE  
**Stem seal:** NBR  
**Working temp.:** From -20°C up to +110°C

A general purpose ball valve designed for industrial installations. Used for air, gases, water, steam, chemicals, petrochemical products, etc. Working pressure depends on working temperature.

code	flow diameter [mm]	length [mm]	thread size [inch]	working pressure [bar]
4174 type (2 x BSP female thread)				
RV-4174-06	8	38	1/4	40
RV-4174-10	10	42	3/8	40
RV-4174-13	14.5	48	1/2	40
RV-4174-19	19	57	3/4	32
RV-4174-25	24	69	1	32
4334 type (BSP male / female thread)				
RV-4334-06	8	45	1/4	40
RV-4334-10	10	48	3/8	40
RV-4334-13	14.5	55	1/2	40
RV-4334-19	19	65	3/4	32
RV-4334-25	24	77	1	32



### Ball valve 4194/4354/4424 type

**Body material:** Nickel-plated brass  
**Ball material:** Chrome-plated brass  
**Ball seal:** PTFE  
**Stem seal:** FKM+NBR  
**Working temp.:** From -20°C up to +150°C

A general purpose ball valve designed for industrial installations. Used for air, gases, water, steam, chemicals, petrochemical products, etc. Working pressure depends on working temperature.

code	flow diameter [mm]	length [mm]	thread size [inch]	working pressure [bar]
4194 type (2 x BSP female thread)				
RV-4194-06	10	45	1/4	64
RV-4194-10	10	45	3/8	64
RV-4194-13	15	59	1/2	64
RV-4194-19	20	69	3/4	40
RV-4194-25	25	83	1	40
4354 type (BSPT male / BSP female thread)				
RV-4354-10	10	52	3/8	64
RV-4354-13	15	66	1/2	64
RV-4354-19	20	76	3/4	40
RV-4354-25	25	91	1	40
4424 type (2 x BSPT male thread)				
RV-4424-13	15	71	1/2	64
RV-4424-19	20	82	3/4	40
RV-4424-25	25	97.5	1	40

## INDUSTRIAL FITTINGS - valves

### Ball valves



A ball valve designed for air and water. Made of zinc-plated steel (ball made of brass). Working pressure 10 bar. Working temp.: from -20°C up to +100°C. Connection: male thread, claw coupling (lug dimension 42 mm) with rubber (NBR) or brass seal.

code	MU-125	MU-124	MU-105	MU-104	MU-115	MU-114
inlet	3/4" female	1" female	3/4" female	1" female	3/4" female	1" female
outlet	3/4" male	3/4" male	MU-904	MU-904	MU-954	MU-954



A double ball valve designed for air and water. Made of zinc-plated steel (ball made of brass). Working pressure 10 bar. Working temp.: from -20°C up to +100°C. Connection: male thread, claw coupling (lug dimension 42 mm) with rubber (NBR) or brass seal.

code	MU-224	MU-223	MU-204	MU-203	MU-214	MU-213
inlet	3/4" female	1" female	3/4" female	1" female	3/4" female	1" female
outlet	2 x 3/4" male	2 x 3/4" male	2 x MU-904	2 x MU-904	2 x MU-954	2 x MU-954

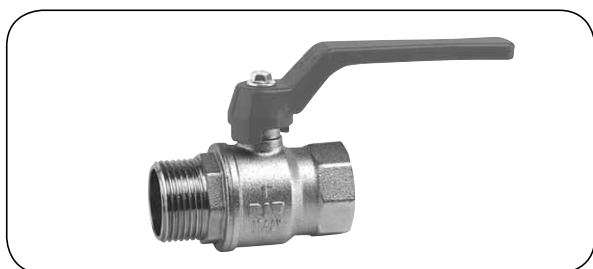


code	Inlet	outlet	cone
MU-301	3/4" male	3/4" male	1:4
MU-302	3/4" male	Rd32x1/8" male	1:3
MU-303	1" male	Rd32x1/8" male	1:3
MU-307	1" male	1" male	1:3
MU-304	1" male	Rd38x1/8" male	1:3
MU-305	2" male	Rd75x1/6" male	1:3

A ball valve designed for pneumatic hammers. Made of zinc-plated steel (ball made of brass). Working pressure 25 bar.

# INDUSTRIAL FITTINGS - valves

## Ball valves



### Ball valve 4170/4330 type

**Body material:** Nickel-plated brass  
**Ball material:** Chrome-plated brass  
**Handle material:** Aluminium  
**Ball seal:** PTFE  
**Stem seal:** NBR  
**Working temp.:** From -20°C up to +110°C

A general purpose ball valve designed for industrial installations. Used for air, gases, water, steam, chemicals, petrochemical products, etc. Working pressure depends on working temperature.

code	flow diameter [mm]	length [mm]	thread size [inch]	working pressure [bar]
4170 type* (2 x BSP female thread)				
RV-4170-006	8	38	1/4	40
RV-4170-010	10	42	3/8	40
RV-4170-013	14.5	48	1/2	40
RV-4170-019	19	57	3/4	32
RV-4170-025	24	69	1	32
RV-4170-032	30.5	79	1.1/4	25
RV-4170-038	37	89	1.1/2	25
RV-4170-050	47	109	2	25
RV-4170-065	60	126	2.1/2	25
RV-4170-075	75	147	3	16
RV-4170-100	94	177	4	16
4330* type (BSP male / female thread)				
RV-4330-006	8	45	1/4	40
RV-4330-010	10	48	3/8	40
RV-4330-013	14.5	55	1/2	40
RV-4330-019	19	65	3/4	32
RV-4330-025	24	77	1	32
RV-4330-032	30.5	87	1.1/4	25
RV-4330-038	37	101	1.1/2	25
RV-4330-050	47	117	2	25
RV-4330-065	60	136	2.1/2	25
RV-4330-075	75	157	3	16
RV-4330-100	94	189	4	16

\* available with steel handle - 4171, 4331 type.

## INDUSTRIAL FITTINGS - valves

### Ball valves



#### Ball valve 4190/4350/4420 type

**Body material:** Nickel-plated brass  
**Ball material:** Chrome-plated brass  
**Handle material:** Aluminium  
**Ball seal:** PTFE  
**Stem seal:** FKM + NBR  
**Working temp.:** From -20°C up to +150°C

A general purpose ball valve designed for industrial installations. Used for air, gases, water, steam, chemicals, petrochemical products, etc. Working pressure depends on working temperature.

code	flow diameter [mm]	length [mm]	thread size [inch]	working pressure [bar]
4190 type (2 x BSP female thread)				
RV-4190-006	10	45	1/4	64
RV-4190-010	10	45	3/8	64
RV-4190-013	15	59	1/2	64
RV-4190-019	20	69	3/4	40
RV-4190-025	25	83	1	40
RV-4190-032	32	94	1.1/4	40
RV-4190-038	40	102	1.1/2	40
RV-4190-050	50	124	2	40
RV-4190-065	65	148	2.1/2	40
RV-4190-075	80	171	3	32
RV-4190-100	100	206	4	25
4350 type (BSPT male / BSP female thread)				
RV-4350-010	10	52	3/8	64
RV-4350-013	15	66	1/2	64
RV-4350-019	20	76	3/4	40
RV-4350-025	25	91	1	40
RV-4350-032	32	101	1.1/4	40
RV-4350-038	40	113	1.1/2	40
RV-4350-050	50	134	2	40
RV-4350-065	65	164	2.1/2	40
RV-4350-075	80	187	3	32
RV-4350-100	100	221	4	25
4420 type (2 x BSPT male thread)				
RV-4420-13	15	71	1/2	64
RV-4420-19	20	82	3/4	40
RV-4420-25	25	97.5	1	40
RV-4420-32	32	108	1.1/4	40
RV-4420-38	40	122	1.1/2	40
RV-4420-50	50	146	2	40



## INDUSTRIAL FITTINGS - valves

### Ball valves



#### Ball valve 2017K type

**Body material:** AISI 316 steel  
**Ball material:** AISI 316 steel  
**Handle material:** AISI 304 steel  
**Ball seal:** PTFE/RTFE  
**Stem seal:** PTFE  
**Connection:** BSP female thread  
**Working temp.:** From -20°C up to +200°C

A general purpose ball valve designed for industrial applications. Used for air, gases, water, steam, chemicals, petrochemical products, etc. Working pressure depends on working temperature.

code	DN [mm]	length [mm]	thread size [inch]	working pressure [bar]
HT-2017K-08	8	39	1/4	63
HT-2017K-10	10	44	3/8	63
HT-2017K-15	15	55	1/2	63
HT-2017K-20	20	59	3/4	63
HT-2017K-25	25	69	1	63
HT-2017K-32	32	77	1.1/4	63
HT-2017K-40	40	81	1.1/2	63
HT-2017K-50	50	97	2	63



#### Ball valve 2006SC / SM3 type

**Body material:** AISI 316 steel  
**Ball material:** AISI 316 steel  
**Handle material:** AISI 304 steel  
**Ball seal:** PTFE/RTFE  
**Stem seal:** PTFE  
**Connection:** BSP female thread  
**Working temp.:** From -20°C up to +200°C

A general purpose ball valve designed for industrial installations. Used for air, gases, water, steam, chemicals, petrochemical products, etc. Working pressure depends on working temperature.

code	DN [mm]	length [mm]	thread size [inch]	working pressure [bar]
HT-2006SC-08	8	50	1/4	63
HT-2006SC-10	10	50	3/8	63
HT-2006SC-15	15	59	1/2	63
HT-2006SC-20	20	66	3/4	63
HT-2006SC-25	25	75.5	1	63
HT-2006SC-32	32	88.7	1.1/4	63
HT-2006SC-40	40	98.5	1.1/2	63
HT-2006SC-50	50	120.6	2	63
HT-2006SC-65	65	146.5	2.1/2	63
HT-2006SC-80	80	167.5	3	63
HT-2006SM3-100	100	240	4	63

## INDUSTRIAL FITTINGS - valves

### Ball valves



#### Ball valve 2013N type

**Body material:** AISI 316 steel  
**Ball material:** AISI 316 steel  
**Handle material:** AISI 304 steel  
**Ball seal:** PTFE/RTFE  
**Stem seal:** PTFE  
**Connection:** BSP female thread  
**Working temp.:** From -20°C up to +200°C

A general purpose ball valve designed for industrial installations. Used for air, gases, water, steam, chemicals, petrochemical products, etc. Working pressure depends on working temperature.

code	DN [mm]	length [mm]	thread size [inch]	working pressure [bar]
HT-2013N-08	8	65	1/4	63
HT-2013N-10	10	65	3/8	63
HT-2013N-15	15	65	1/2	63
HT-2013N-20	20	75	3/4	63
HT-2013N-25	25	85	1	63
HT-2013N-32	32	101	1.1/4	63
HT-2013N-40	40	112	1.1/2	63
HT-2013N-50	50	130	2	63
HT-2013N-65	65	162	2.1/2	63



#### Ball valve 2057N type

**Body material:** AISI 316 steel  
**Ball material:** AISI 316 steel  
**Handle material:** AISI 304 steel  
**Ball seal:** PTFE/RTFE  
**Stem seal:** PTFE  
**Connection:** BSP female thread  
**Working temp.:** From -20°C up to +200°C

A general purpose ball valve designed for industrial installations. Used for air, gases, water, steam, chemicals, petrochemical products, etc. Working pressure depends on working temperature.

code 2057N type (L boring)	code 2057N type (T boring)	DN [mm]	length [mm]	thread size [inch]	working press. [bar]
HT-2057N-08L	HT-2057N-08T	8	76	1/4	63
HT-2057N-10L	HT-2057N-10T	10	76	3/8	63
HT-2057N-15L	HT-2057N-15T	15	76	1/2	63
HT-2057N-20L	HT-2057N-20T	20	86	3/4	63
HT-2057N-25L	HT-2057N-25T	25	99	1	63
HT-2057N-32L	HT-2057N-32T	32	117	1.1/4	63
HT-2057N-40L	HT-2057N-40T	40	124	1.1/2	63
HT-2057N-50L	HT-2057N-50T	50	148	2	63

## INDUSTRIAL FITTINGS - valves

### Ball valves



#### Ball valve LS

**Body material:** AISI 316 steel  
**Ball material:** AISI 316 steel  
**Handle material:** AISI 316 steel  
**Seal:** Body - Viton  
 Ball - nylon  
**Stem seal:** TFE  
**Connection:** NPT female thread  
**Working temp.:** Up to +100°C

Ball valves, LS type, can be reliably used for the most demanding applications. They are intended for such media as: H<sub>2</sub>S, CO<sub>2</sub>, salt water and other highly corrosive fluids. Maintenance free - does not require any lubrication during whole service life. Manufactured according to NACE standard (NACE - international organisation which provides corrosion prevention and control solutions for mining, petrochemical, gas and chemical industry).

code	thread size [inch]	flow diameter [mm]	working pressure [bar]	length [mm]	weight [kg]
BL-LS-02592	1/4	9.4	207	66.5	0.41
BL-LS-05561	1/2	9.4	138	63.5	0.34
BL-LS-05591	1/2	9.4	207	76.2	0.45
BL-LS-07592	3/4	19	207	95.3	1.14
BL-LS-10561	1	19	138	95.3	0.91
BL-LS-10591	1	19	207	104.6	1.14



#### Ball valve 4500 type

**Body material:** Nickel-plated brass  
**Ball material:** Chrome-plated brass  
**Ball seal:** PTFE  
**Stem seal:** FKM  
**Connection:** BSP female thread  
**Working temp.:** From -20°C up to +95°C

A general purpose ball valve with a mounting pad for an actuator designed for industrial installations. Used for air, gases, water, steam, chemicals, petrochemical products, etc. Working pressure depends on working temperature.

code	DN	thread size [inch]	actuator type ISO 5211	length [mm]	working pressure [bar]
RV-4500-15	15	1/2	M1 (F03)	59	40
RV-4500-20	20	3/4	M1 (F03)	69	40
RV-4500-25	25	1	M1 (F03)	83	40
RV-4500-32	32	1.1/4	M4 (F05)	94	40
RV-4500-40	40	1.1/2	M4 (F05)	102	40
RV-4500-50	50	2	M4 (F05)	124	40

## INDUSTRIAL FITTINGS - valves

### Ball valves

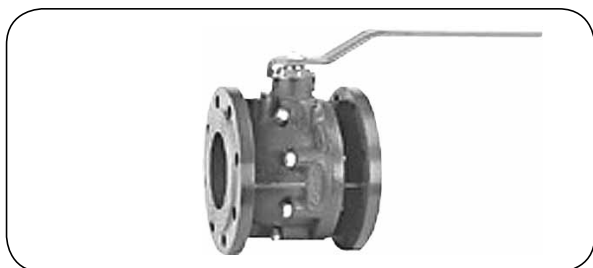


#### Ball valve 2019S type

**Body material:** AISI 316 steel  
**Ball material:** AISI 316 steel  
**Handle material:** AISI 304 steel  
**Ball seal:** PTFE/RTFE  
**Stem seal:** PTFE  
**Connection:** PN16 flange (DIN 2501)  
**Working temp.:** From -20°C up to +200°C

A general purpose flanged ball valve designed for industrial installations. Used for air, gases, water, steam, chemicals, petrochemical products, etc. Working pressure depends on working temperature.

code	DN [mm]	length [mm]	working pressure [bar]
HT-2019S-015	15	115	16
HT-2019S-020	20	120	16
HT-2019S-025	25	125	16
HT-2019S-032	32	130	16
HT-2019S-040	40	140	16
HT-2019S-050	50	150	16
HT-2019S-065	65	170	16
HT-2019S-080	80	180	16
HT-2019S-100	100	190	16



#### Ball valve 5550 type

**Body material:** Cast iron  
**Ball material:** Chrome-plated brass  
**Handle material:** Carbon steel  
**Ball seal:** PTFE  
**Stem seal:** NBR  
**Connection:** PN16 flanges  
**Working temp.:** From -10°C up to +100°C

A general purpose flanged ball valve adjusted to fit an actuator in compliance with ISO 5211. It is designed for application in industrial installations. Used for air, gases, water, steam, chemicals, petrochemical products, etc. Working pressure depends on working temperature.

code	DN [mm]	length [mm]	flange O.D. [mm]	number of bolts x thread	ISO 5211	working pressure [bar]
RV-5550-020	20	120	105	4 x M12	F04	16
RV-5550-025	25	125	115	4 x M12	F04	16
RV-5550-032	32	130	140	4 x M16	F04	16
RV-5550-040	40	140	150	4 x M16	F05	16
RV-5550-050	50	150	165	4 x M16	F05	16
RV-5550-065	65	170	185	4 x M16	F05	16
RV-5550-080	80	180	200	8 x M16	F07	16
RV-5550-100	100	190	220	8 x M16	F07	16
RV-5550-125	125	200	250	8 x M16	F10	16
RV-5550-150	150	210	285	8 x M20	F10	16
RV-5550-200	200	400	340	12 x M20	F10	16

# INDUSTRIAL FITTINGS - valves

## Ball valves



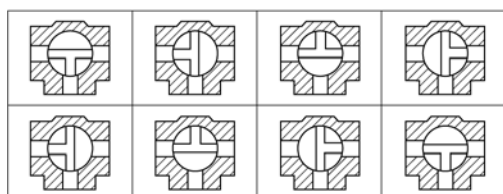
### Ball valve 5310/5311 type

**Body material:** Nickel-plated brass  
**Ball material:** Chrome-plated brass  
**Handle material:** Aluminium  
**Ball seal:** PTFE  
**Stem seal:** NBR  
**Connection:** From -10°C up to +110°C  
**Working temp.:** BSP female thread

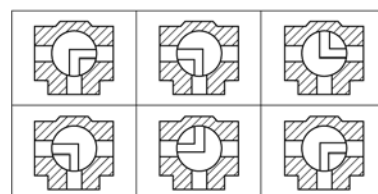
A general purpose ball valve designed for industrial installations. Used for air, gases, water, steam, chemicals, petrochemical products, etc. Working pressure depends on working temperature.

code	thread size [inch]	flow diameter [mm]	length [mm]	working pressure [bar]
5310 type (T boring)				
RV-5310-006	1/4	10	77	25
RV-5310-010	3/8	12	77	25
RV-5310-013	1/2	14	77	25
RV-5310-019	3/4	18	92	25
RV-5310-025	1	23	104	25
RV-5310-032	1.1/4	29	118	25
RV-5310-038	1.1/2	36	138	25
RV-5310-050	2	45	162	25
5311 type (L boring)				
RV-5311-006	1/4	10	77	25
RV-5311-010	3/8	12	77	25
RV-5311-013	1/2	14	77	25
RV-5311-019	3/4	18	92	25
RV-5311-025	1	23	104	25
RV-5311-032	1.1/4	29	118	25
RV-5311-038	1.1/2	36	138	25
RV-5311-050	2	45	162	25

T boring

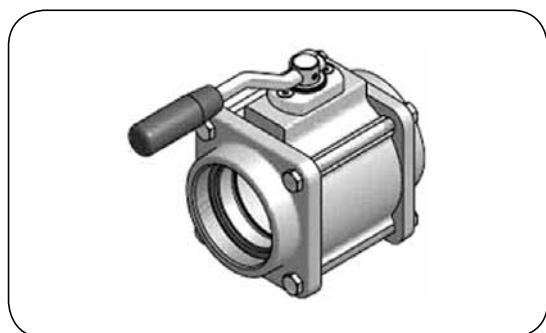


L boring



# INDUSTRIAL FITTINGS - valves

## Ball valves



### Ball valve Full Flow type

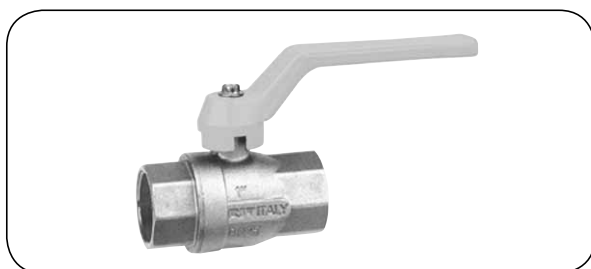
**Material:** Body, ball - aluminium  
Spindle - stainless steel  
Connections - Al, St, SS  
**Sealing:** Viton / PTFE - valve PUR - connections  
**Connection:** Thread: BSP, NPT  
Flanges: DIN, ASA, TW  
**Working press.:** 10 bar  
**Working temp.:** From -20°C up to +80°C

Full flow ball valves are widely used in road, rail, air transport as well as in petrochemical industry. Meet all requirements regarding safety, environment protection and reliability during hazardous and valuable fluid transfer. A version with pneumatic actuator available.  
Meets ATEX, ADR, RID, IMDG, TDT standards.

picture	code	connection	material	seal		weight [kg]
				valve	thread	
	MK-FFV-B210A1101	2" BSP female	aluminium	PUR		2.20
	MK-FFV-B210A1301	2" BSP female	carbon steel			2.60
	MK-FFV-B211A1101	2" NPT female	aluminium			2.30
	MK-FFV-B414A1101	3" BSP female	aluminium			-
	MK-FFV-B414A1301	3" BSP female	carbon steel			4.70
	MK-FFV-B415A1101	3" NPT female	aluminium			4.00
	MK-FFV-B516A1101	4" BSP female	aluminium			7.10
	MK-FFV-B516A1301	4" BSP female	carbon steel			10.00
	MK-FFV-B517A1101	4" NPT female	aluminium			7.50
	MK-FFV-B278A1101	2" BSP male	aluminium	Viton / PTFE		2.00
	MK-FFV-B482A1101	3" BSP male	aluminium			3.80
	MK-FFV-B482A1301	3" BSP male	carbon steel			4.70
	MK-FFV-B584A1101	4" BSP male	aluminium			7.50
	MK-FFV-B584A1301	4" BSP male	carbon steel			10.00
	MK-FFV-B287A1101	TW1 / 50	aluminium		-	3.30
	MK-FFV-B465A1101	TW1 / 80				5.50
	MK-FFV-B566A1101	TW3 / 100				8.00
	MK-FFV-B433A1101	DN65 PN10/16	aluminium			-
	MK-FFV-B436A1101	DN80 PN10/16				5.40
	MK-FFV-B459A1101	2.1/2" ASA 150				-
	MK-FFV-B461A1101	3" ASA 150				5.90
	MK-FFV-B539A1101	DN100 PN10/16				9.60
	MK-FFV-B563A1101	4" ASA 150				10.00
Repair kit Set of valve seals	MK-FFV-O-B2-01	2"	Viton / PTFE	-	-	
	MK-FFV-O-B4-01	3"				
	MK-FFV-O-B5-01	4"				
Repair kit Flat seal	MK-1052-09	2"	PUR	-	-	0.003
	MK-1110-09	3"				0.006
	MK-1295-09	4"				0.009
Set of spare parts	MK-FFV-S-B2-11	2"	aluminium	-	-	-
	MK-FFV-S-B2-13	2"	carbon steel			
	MK-FFV-S-B4-11	3"	aluminium			
	MK-FFV-S-B4-13	3"	carbon steel			
	MK-FFV-S-B5-11	4"	aluminium			
	MK-FFV-S-B5-13	4"	carbon steel			

# INDUSTRIAL FITTINGS - valves

## Ball valves



### Ball valve 7160 type

**Body material:** Nickel-plated brass  
**Ball material:** Chrome-plated brass  
**Handle material:** Aluminium  
**Ball seal:** PTFE  
**Stem seal:** FKM + NBR  
**Connection:** BSP female thread  
**Working temp.:** From -20°C up to +60°C

A general purpose ball valve designed for gas installations. Meets the requirements of Directive 97/23/CE (PED), 2009/142/ CE, compliant with EN 331 + A1 standard.

code	flow diameter [mm]	length [mm]	thread size [inch]	working pressure [bar]
RV-7160-006	10	45	1/4	5
RV-7160-010	10	45	3/8	5
RV-7160-013	15	59	1/2	5
RV-7160-019	20	69	3/4	5
RV-7160-025	25	83	1	5
RV-7160-032	32	94	1.1/4	5
RV-7160-038	40	102	1.1/2	5
RV-7160-050	50	124	2	5
RV-7160-065	65	148	2.1/2	5
RV-7160-075	80	171	3	5
RV-7160-100	100	206	4	5



### Ball valve 7164 type

**Body material:** Nickel-plated brass  
**Ball material:** Chrome-plated brass  
**Handle material:** Aluminium  
**Ball seal:** PTFE  
**Stem seal:** FKM + NBR  
**Connection:** BSP female thread  
**Working temp.:** From -20°C up to +60°C

A general purpose ball valve designed for gas installations. Meets the requirements of Directive 97/23/CE (PED), 2009/142/ CE, compliant with EN 331 + A1 standard.

code	flow diameter [mm]	length [mm]	thread size [inch]	working pressure [bar]
RV-7164-06	10	45	1/4	5
RV-7164-10	10	45	3/8	5
RV-7164-13	15	59	1/2	5
RV-7164-19	20	69	3/4	5
RV-7164-25	25	83	1	5

## INDUSTRIAL FITTINGS - valves

### Gate valves



#### Gate valve 2000 type

**Body material:** Brass  
**Gate material:** Brass  
**Knob material:** Carbon steel  
**Stem seal:** EPDM  
**Connection:** BSP female thread  
**Working temp.:** From -10°C up to +80°C

A general purpose gate valve designed for industry installations. The valve can be used to control or throttle flow. Working pressure depends on working temperature.

code	flow diameter [mm]	length [mm]	thread size [inch]	working pressure [bar]
RV-2000-06	13	33	1/4	10
RV-2000-10	13	33	3/8	10
RV-2000-13	14	35	1/2	10
RV-2000-19	15	40	3/4	10
RV-2000-25	19	43	1	10
RV-2000-32	27	48	1.1/4	10
RV-2000-38	33	53	1.1/2	10
RV-2000-50	45	58	2	10



#### Gate valve 2010 type

**Body material:** Brass  
**Gate material:** Brass  
**Knob material:** Carbon steel  
**Stem seal:** EPDM  
**Connection:** BSP female thread  
**Working temp.:** From -10°C up to +90°C

A general purpose gate valve designed for industry installations. The valve is can be used to control or throttle flow. Working pressure depends on working temperature.

code	flow diameter [mm]	length [mm]	thread size [inch]	working pressure [bar]
RV-2010-013	15	38	1/2	16
RV-2010-019	19	44	3/4	16
RV-2010-025	24	48	1	16
RV-2010-032	32	51	1.1/4	16
RV-2010-038	37	58	1.1/2	16
RV-2010-050	47	60	2	16
RV-2010-065	60	64	2.1/2	16
RV-2010-075	69	74	3	16
RV-2010-090	83	82	3.1/2	16
RV-2010-100	89	86	4	16
RV-2010-125	117	95	5	10
RV-2010-150	143	105	6	10



## INDUSTRIAL FITTINGS - valves

### Gate valves



#### Gate valve 2029 type

**Body material:** AISI 316 steel  
**Gate material:** AISI 316 steel  
**Knob material:** Aluminium  
**Stem seal:** PTFE  
**Connection:** BSP female thread  
**Working temp.:** From -20°C up to +200°C

A general purpose gate valve designed for industrial installations. The valve can be used to control or throttle flow. Working pressure depends on working temperature.

code	DN [mm]	thread size [inch]	working pressure [bar]
HT-2029-15	15	1/2	10
HT-2029-20	20	3/4	10
HT-2029-25	25	1	10
HT-2029-32	32	1.1/4	10
HT-2029-40	40	1.1/2	10
HT-2029-50	50	2	10
HT-2029-65	65	2.1/2	10
HT-2029-80	80	3	10



#### Gate valve 560 type

**Body material:** Brass  
**Gate material:** Brass  
**Handle material:** Carbon steel  
**Connection:** BSP female thread  
 (NPT available)  
**Working temp.:** From -20°C up to +90°C

A lever gate valve allows quick opening and closing of the fluid flow. Two horizontally pivoted discs design ensures perfect valve tightness. Widely used in agriculture, septic tank trucks, industry. Meets the requirements of Directive 97/23/CE (PED). Working pressure depends on working temperature.

code	thread size [inch]	flow diameter [mm]	build-in length [mm]	working pressure [bar]	weight [kg]
RV-0560-050	2	49	75	16	1.77
RV-0560-065	2.1/2	59	80	16	3.12
RV-0560-075	3	70	86	10	4.08
RV-0560-100	4	93	92	10	6.08

## INDUSTRIAL FITTINGS - valves

### Gate valves



#### Piston gate valve

**Body material:** Brass  
**Gate material:** Brass  
**Flange seal:** NBR  
**Connection:** Square flanges (O-ring sealing)  
**Power:** Pneumatic actuator  
           - max. pressure 12 bar  
           - recommended pressure 6 bar  
**Working temp.:** From -20°C up to +90°C

A piston gate valve allows quick opening and closing of the fluid flow. Available in several versions: with pneumatic, single or double acting hydraulic actuator, with flanged connections, BSP or NPT thread. Widely used in agriculture, septic tank trucks, industry. Meets the requirements of Directive 97/23/CE (PED). Working pressure depends on working temperature.

code	DN [inch]	connection bolt spacing [mm]	flow diameter [mm]	build-in length [mm]	working pressure [bar]	weight [kg]	version
RV-0010-100	4	150	91	97	3	5.97	without actuator
RV-0010-125	5	150	120	90	3	7.66	
RV-0010-150	6	150	143	90	2.5	8.20	
RV-0010-200	8	180	191	111	1.5	17.51	
RV-0013-100	4	150	91	97	3	9.64	with pneumatic actuator (two side operation)
RV-0013-125	5	150	120	90	3	11.32	
RV-0013-150	6	150	143	90	2.5	12.15	
RV-0013-200	8	180	191	111	1.5	22.90	

# INDUSTRIAL FITTINGS - valves

## Butterfly valves



### Butterfly valve 1125 type

**Body material:** Grey cast iron EN-GJL-250  
**Disc material:** Nickel-plated ductile iron EN-GJS-400-15  
**Sealing:** EPDM  
**Connection:** PN10/PN16 flange  
**Working temp.:** From -10°C up to +110°C

A general purpose butterfly valve designed for industrial installations. Opened and closed manually or with a pneumatic actuator. Equipped with 10-position locking handle - open, closed and intermediate positions.

code (manual operation)	code (pneumatic operation)	DN	actuator ISO 5211 type	build-in length [mm]	working pressure [bar]	weight [kg]
TD-1125-040H	TD-1125-040P	40	F05	33	16	2.00
TD-1125-050H	TD-1125-050P	50	F05	43	16	2.50
TD-1125-065H	TD-1125-065P	65	F05	46	16	3.10
TD-1125-080H	TD-1125-080P	80	F05	46	16	3.85
TD-1125-100H	TD-1125-100P	100	F05	52	16	4.75
TD-1125-125H	TD-1125-125P	125	F07	56	16	6.35
TD-1125-150H	TD-1125-150P	150	F07	56	16	8.50
TD-1125-200H	TD-1125-200P	200	F10	60	16	13.00
TD-1125-250H	TD-1125-250P	250	F12	68	16	29.75
TD-1125-300H	TD-1125-300P	300	F12	78	16	37.65



### Butterfly valve 1123 type

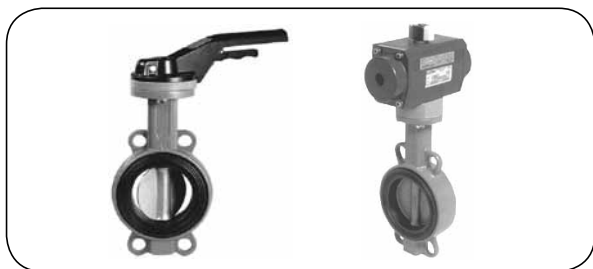
**Body material:** Grey cast iron EN-GJL-250  
**Disc material:** AISI 316 steel  
**Sealing:** EPDM  
**Connection:** PN10/PN16 flange  
**Working temp.:** From -10°C up to +90°C

A general purpose butterfly valve designed for industrial installations. Opened and closed manually or with a pneumatic actuator. Equipped with 10-position locking handle - open, closed and intermediate positions.

code (manual operation)	code (pneumatic operation)	DN	actuator ISO 5211 type	build-in length [mm]	working pressure [bar]	weight [kg]
TD-1123-040H	TD-1123-040P	40	F05	33	16	2.00
TD-1123-050H	TD-1123-050P	50	F05	43	16	2.50
TD-1123-065H	TD-1123-065P	65	F05	46	16	3.10
TD-1123-080H	TD-1123-080P	80	F05	46	16	3.85
TD-1123-100H	TD-1123-100P	100	F05	52	16	4.75
TD-1123-125H	TD-1123-125P	125	F07	56	16	6.35
TD-1123-150H	TD-1123-150P	150	F07	56	16	8.50
TD-1123-200H	TD-1123-200P	200	F10	60	16	13.00
TD-1123-250H	TD-1123-250P	250	F12	68	16	29.75
TD-1123-300H	TD-1123-300P	300	F12	78	16	37.65

## INDUSTRIAL FITTINGS - valves

### Butterfly valves



#### Butterfly valve 1153 type

**Body material:** Ductile iron EN-GJS-500-7  
**Disc material:** AISI 316 steel  
**Sealing:** EPDM  
**Connection:** PN10/PN16 flange  
**Working temp.:** From -10°C up to +110°C

A general purpose butterfly valve designed for industrial application in potentially explosive atmospheres (Ex marking). Opened and closed manually or with a pneumatic actuator. Equipped with 9-position locking handle - open, closed and intermediate positions.

code (manual operation)	code (pneumatic operation)	DN	actuator ISO 5211 type	build-in length [mm]	working pressure [bar]	weight [kg]
TD-1153-032H	TD-1153-032P	32	F07	33	16	2.00
TD-1153-040H	TD-1153-040P	40	F07	33	16	2.00
TD-1153-050H	TD-1153-050P	50	F07	43	16	3.50
TD-1153-065H	TD-1153-065P	65	F07	46	16	4.50
TD-1153-080H	TD-1153-080P	80	F07	46	16	5.00
TD-1153-100H	TD-1153-100P	100	F07	52	16	6.50
TD-1153-125H	TD-1153-125P	125	F07	56	16	8.00
TD-1153-150H	TD-1153-150P	150	F07	56	16	9.00
TD-1153-200H	TD-1153-200P	200	F07	60	16	15.00
TD-1153-250H	TD-1153-250P	250	F10	68	16	21.50
TD-1153-300H	TD-1153-300P	300	F10	78	16	30.00
TD-1153-350H	TD-1153-350P	350	F14	78	10	39.00
TD-1153-400H	TD-1153-400P	400	F14	102	10	52.00



#### Butterfly valve 1141 type

**Body material:** Ductile iron EN-GJS-500-7  
**Disc material:** AISI 316 (up to DN100)  
 Ductile iron EN-GJS-500-7  
 (from DN125)  
**Seal:** NBR  
**Connection:** PN16 flange  
**Working temp.:** From -20°C up to +60°C

A general purpose butterfly valve designed for gas industrial installations. Opened and closed manually or with a pneumatic actuator. Equipped with 9-position locking handle - open, closed and intermediate positions. Compliant with EN 13774 and EN 549 standards.

code (manual operation)	code (pneumatic operation)	DN	actuator ISO 5211 type	working pressure [bar]	weight [kg]
TD-1141-040H	TD-1141-040P	40	F07	5	2.00
TD-1141-050H	TD-1141-050P	50	F07	5	3.50
TD-1141-065H	TD-1141-065P	65	F07	5	4.50
TD-1141-080H	TD-1141-080P	80	F07	5	5.00
TD-1141-100H	TD-1141-100P	100	F07	5	6.50
TD-1141-125H	TD-1141-125P	125	F07	5	8.00
TD-1141-150H	TD-1141-150P	150	F07	5	9.00
TD-1141-200H	TD-1141-200P	200	F07	5	15.00

# INDUSTRIAL FITTINGS - valves

## Stainless steel hygienic valves



<b>Body material:</b>	AISI 304 steel (standard)
<b>Sealing:</b>	AISI 316L steel (option) VMQ (standard) FPM (option) EPDM (option) HNBR (option)
<b>Tightness class:</b>	A according to DIN EN 12266-1
<b>Working pressure:</b>	10 bar (DN25 ÷ DN150)

Stainless steel hygienic valves are intended for food, pharmaceutical, cosmetic, biotechnological and chemical industries. Inner layer porosity  $Ra < 0.8 \mu m$ . The valves equipped with EPDM and Viton seals meet the requirements of EHEDG (European Hygienic Engineering & Design Group) regarding the application for liquid media and are approved for CIP cleaning (EL-class I). They are compliant with ATEX Directive (94/0/WE). The seals are approved by BGA, FDA and PZH.

The valve is supplied with VMQ (silicone) seal and with the body made of AISI 304 stainless steel as a standard. If other body or seal material version is required, a suffix must be added to a code: 316 - AISI 316 steel, V - FPM, E - EPDM, N - HNBR, e.g. NM-DIN-GG-050-316-E.

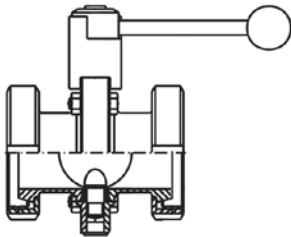
### Permissible working temperature of seal materials:

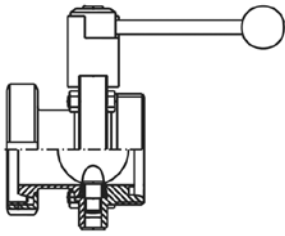
VMQ (silicone)	EPDM	FPM (Viton)	HNBR
from -20°C to +100°C short sterilization with steam up to +120°C cleaning with diluted acid or base solutions up to +70°C	from -40°C to +140°C sterilization with steam up to +130°C	from -20°C to +200°C short sterilization with steam up to +130°C	from -20°C to +140°C (with peaks up to +150°C) sterilization with steam up to +130°C

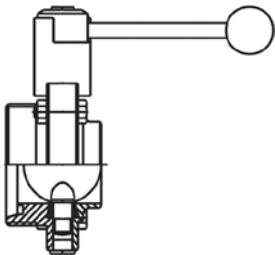
picture	code	DN	flow diameter [mm]	build-in length [mm]	thread size	weight [kg]
Valve acc. to DIN11851, male threads  	NM-DIN-GG-010	10	10	78	Rd 28x1/8"	0.80
	NM-DIN-GG-015	15	16	78	Rd 34x1/8"	0.80
	NM-DIN-GG-020	20	20	78	Rd 44x1/6"	0.80
	NM-DIN-GG-025	25	26	64	Rd 52x1/6"	1.70
	NM-DIN-GG-032	32	32	64	Rd 58x1/6"	1.80
	NM-DIN-GG-040	40	38	72	Rd 65x1/6"	2.00
	NM-DIN-GG-050	50	50	72	Rd 78x1/6"	2.40
	NM-DIN-GG-065	65	66	76	Rd 95x1/6"	3.10
	NM-DIN-GG-080	80	81	100	Rd 110x1/4"	5.20
	NM-DIN-GG-100	100	100	104	Rd 130x1/4"	6.50
	NM-DIN-GG-125	125	125	112	Rd 160x1/4"	10.20
	NM-DIN-GG-150	150	150	124	Rd 190x1/4"	13.90

## INDUSTRIAL FITTINGS - valves

### Stainless steel hygienic valves

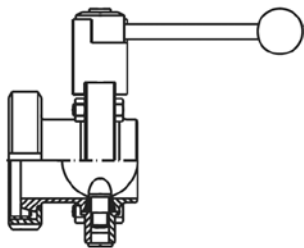
picture	code	DN	flow diameter [mm]	build-in length [mm]	thread size	weight [kg]
<p>Valve acc. to DIN11851, female threads</p> 	NM-DIN-KK-010	10	10	74	Rd 28x1/8"	0.60
	NM-DIN-KK-015	15	16	74	Rd 34x1/8"	0.60
	NM-DIN-KK-020	20	20	76	Rd 44x1/6"	0.60
	NM-DIN-KK-025	25	26	84	Rd 52x1/6"	2.00
	NM-DIN-KK-032	32	32	92	Rd 58x1/6"	2.20
	NM-DIN-KK-040	40	38	102	Rd 65x1/6"	2.60
	NM-DIN-KK-050	50	50	106	Rd 78x1/6"	3.50
	NM-DIN-KK-065	65	66	114	Rd 95x1/6"	4.30
	NM-DIN-KK-080	80	81	134	Rd 110x1/4"	7.30
	NM-DIN-KK-100	100	100	152	Rd 130x1/4"	9.90
	NM-DIN-KK-125	125	125	180	Rd 160x1/4"	11.80
	NM-DIN-KK-150	150	150	198	Rd 190x1/4"	15.20

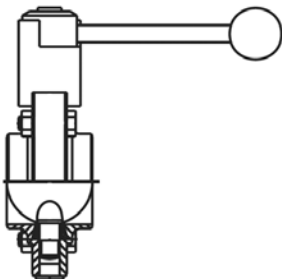
picture	code	DN	flow diameter [mm]	build-in length [mm]	thread size	weight [kg]
<p>Valve acc. to DIN11851, female / male threads</p> 	NM-DIN-GK-025	25	26	74	Rd 52x1/6"	1.80
	NM-DIN-GK-032	32	32	78	Rd 58x1/6"	1.90
	NM-DIN-GK-040	40	38	87	Rd 65x1/6"	2.20
	NM-DIN-GK-050	50	50	89	Rd 78x1/6"	2.70
	NM-DIN-GK-065	65	66	95	Rd 95x1/6"	3.40
	NM-DIN-GK-080	80	81	117	Rd 110x1/4"	5.60
	NM-DIN-GK-100	100	100	128	Rd 130x1/4"	7.10
	NM-DIN-GK-125	125	125	146	Rd 160x1/4"	11.40
	NM-DIN-GK-150	150	150	161	Rd 190x1/4"	15.60

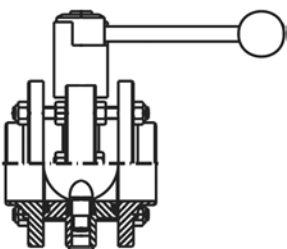
picture	code	DN	flow diameter [mm]	build-in length [mm]	thread size	pipe O.D. [mm]	weight [kg]
<p>Valve acc. to DIN 11851, male thread / welding end connection</p> 	NM-DIN-GS-025	25	26	52	Rd 52x1/6"	31	1.50
	NM-DIN-GS-032	32	32	53	Rd 58x1/6"	37	1.60
	NM-DIN-GS-040	40	38	61	Rd 65x1/6"	43	1.80
	NM-DIN-GS-050	50	50	61	Rd 78x1/6"	55	2.10
	NM-DIN-GS-065	65	66	63	Rd 95x1/6"	70	2.60
	NM-DIN-GS-080	80	81	80	Rd 110x1/4"	85	4.60
	NM-DIN-GS-100	100	100	84	Rd 130x1/4"	104	5.60
	NM-DIN-GS-125	125	125	112	Rd 160x1/4"	129	9.20
	NM-DIN-GS-150	150	150	124	Rd 190x1/4"	154	12.20

# INDUSTRIAL FITTINGS - valves

## Stainless steel hygienic valves

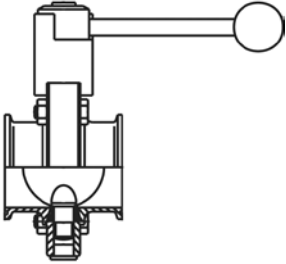
picture	code	DN	flow diameter [mm]	build-in length [mm]	thread size	pipe O.D. [mm]	weight [kg]
<p>Valve acc. to DIN 11851, female thread / welding end connection</p> 	NM-DIN-KS-025	25	26	62	Rd 52x1/6"	31	1.60
	NM-DIN-KS-032	32	32	67	Rd 58x1/6"	37	1.80
	NM-DIN-KS-040	40	38	76	Rd 65x1/6"	43	2.10
	NM-DIN-KS-050	50	50	78	Rd 78x1/6"	55	2.70
	NM-DIN-KS-065	65	66	82	Rd 95x1/6"	70	3.20
	NM-DIN-KS-080	80	81	97	Rd 110x1/4"	85	5.60
	NM-DIN-KS-100	100	100	108	Rd 130x1/4"	104	7.40
	NM-DIN-KS-125	125	125	146	Rd 160x1/4"	129	10.70
	NM-DIN-KS-150	150	150	161	Rd 190x1/4"	154	13.30

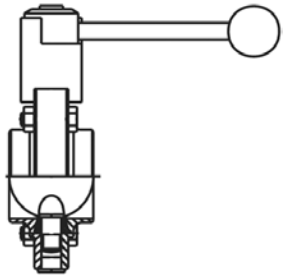
picture	code	DN	flow diameter [mm]	build-in length [mm]	pipe O.D. [mm]	weight [kg]
<p>Valve acc. to DIN 11851, welding end connection</p> 	NM-DIN-SS-010	10	10	40	13	0.60
	NM-DIN-SS-015	15	16	40	19	0.60
	NM-DIN-SS-020	20	20	40	23	0.60
	NM-DIN-SS-025	25	26	40	31	1.30
	NM-DIN-SS-032	32	32	42	37	1.40
	NM-DIN-SS-040	40	38	50	43	1.50
	NM-DIN-SS-050	50	50	50	55	1.80
	NM-DIN-SS-065	65	66	50	70	2.20
	NM-DIN-SS-080	80	81	60	85	4.00
	NM-DIN-SS-100	100	100	64	104	4.80
	NM-DIN-SS-125	125	125	112	129	8.10
	NM-DIN-SS-150	150	150	124	154	10.30

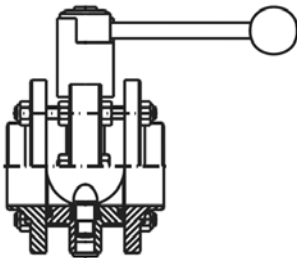
picture	code	DN	flow diameter [mm]	build-in length [mm]	pipe O.D. [mm]	weight [kg]
<p>Valve acc. to DIN 11851, welding flanges</p> 	NM-DIN-ZFA-010	10	10	80	13	0.60
	NM-DIN-ZFA-015	15	16	80	19	0.60
	NM-DIN-ZFA-020	20	20	80	23	0.60
	NM-DIN-ZFA-025	25	26	90	31	2.40
	NM-DIN-ZFA-032	32	32	90	37	2.60
	NM-DIN-ZFA-040	40	38	100	43	2.80
	NM-DIN-ZFA-050	50	50	100	55	3.40
	NM-DIN-ZFA-065	65	66	100	70	4.10
	NM-DIN-ZFA-080	80	81	136	85	7.40
	NM-DIN-ZFA-100	100	100	136	104	8.80
	NM-DIN-ZFA-125	125	125	168	129	15.10
	NM-DIN-ZFA-150	150	150	168	154	18.40
	NM-DIN-ZFA-200	200	200	112	204	26.20

## INDUSTRIAL FITTINGS - valves

### Stainless steel hygienic valves

picture	code	DN	flow diameter [mm]	build-in length [mm]	plate diameter [mm]	weight [kg]
Valve acc. to. DIN 32676-A, TRICLOVER end connection 	NM-DIN-CC-010	10	10	76	34	0.60
	NM-DIN-CC-015	15	16	76	34	0.60
	NM-DIN-CC-020	20	20	76	34	0.60
	NM-DIN-CC-025	25	26	64	50.5	1.50
	NM-DIN-CC-032	32	32	72	50.5	1.50
	NM-DIN-CC-040	40	38	72	50.5	1.70
	NM-DIN-CC-050	50	50	72	64	1.90
	NM-DIN-CC-065	65	66	76	91	2.40
	NM-DIN-CC-080	80	81	100	106	4.40
	NM-DIN-CC-100	100	100	104	119	5.20

picture	code	DN	flow diameter [mm]	build-in length [mm]	pipe O.D. [mm]	weight [kg]
Valve according to ISO, welding end connection 	NM-ISO-SS-025	25	28.5	40	33.7	1.3
	NM-ISO-SS-032	32	37.2	42	42.4	1.4
	NM-ISO-SS-040	40	43.1	50	48.3	1.5
	NM-ISO-SS-050	50	55.1	50	60.3	1.8
	NM-ISO-SS-065	65	70.9	50	76.1	2.2
	NM-ISO-SS-080	80	83.7	60	88.9	4.0
	NM-ISO-SS-100	100	109.1	64	114.3	4.8

picture	code	DN	flow diameter [mm]	build-in length [mm]	pipe O.D. [mm]	weight [kg]
Valve according to ISO, welding flanges 	NM-ISO-ZFA-025	25	29.7	90	33.7	1.3
	NM-ISO-ZFA-032	32	38.4	90	42.4	1.4
	NM-ISO-ZFA-040	40	44.3	100	48.3	1.5
	NM-ISO-ZFA-050	50	56.3	100	60.3	1.8
	NM-ISO-ZFA-065	65	71.5	100	76.1	2.2
	NM-ISO-ZFA-080	80	84.3	136	88.9	4.0
	NM-ISO-ZFA-100	100	109.1	136	114.3	4.8



## INDUSTRIAL FITTINGS - valves

### Check valves and filters



#### Foot valve 2350 type

**Body material:** Brass  
**Obturator:** Brass  
**Sealing:** NBR  
**Connection:** BSP female thread  
**Working temp.:** From -10°C up to +90°C

A general purpose foot valve designed for industrial installations. The valve must be mounted according to the flow direction marked on its body. Working pressure depends on working temperature.

code	thread size [inch]	length [mm]	working pressure [bar]
RV-2350-019	3/4	70	10
RV-2350-025	1	82	10
RV-2350-032	1.1/4	95	8
RV-2350-038	1.1/2	103	8
RV-2350-050	2	121	8
RV-2350-065	2.1/2	137	6
RV-2350-075	3	173	6
RV-2350-100	4	199	6
RV-2350-125	5	239	6
RV-2350-150	6	267	6



#### Swing check valve 2251 type

**Body material:** Brass (up to 4"), bronze (5" and 6")  
**Obturator:** Brass  
**Connection:** BSP female thread  
**Working temp.:** From -10°C up to +90°C

A general purpose swing check valve designed for industrial installations. The valve must be mounted according to the flow direction marked on its body. Working pressure depends on working temperature.

code	thread size [inch]	length [mm]	working pressure [bar]
RV-2251-013	1/2	47	16
RV-2251-019	3/4	54	16
RV-2251-025	1	64	16
RV-2251-032	1.1/4	76	16
RV-2251-038	1.1/2	83	16
RV-2251-050	2	98	16
RV-2251-065	2.1/2	116	16
RV-2251-075	3	135	16
RV-2251-100	4	164	10
RV-2251-125	5	206	10
RV-2251-150	6	235	10

## INDUSTRIAL FITTINGS - valves

### Check valves and filters



#### Spring check valve 2280 type

**Body material:** Brass  
**Spring material:** AISI 302 steel  
**Disc material:** POM  
**Sealing:** NBR  
**Connection:** BSP female thread  
**Min. opening press:** 0.02 bar - 3/8" ÷ 2.1/2"  
                                   0.1 bar - 3" ÷ 4"  
**Working temp.:** From -10°C up to +90°C

A general purpose spring check valve designed for industrial installations. It can be mounted in any position. However, the valve must be mounted according to the flow direction marked on its body. Working pressure depends on working temperature.

code	thread size [inch]	length [mm]	working pressure [bar]
RV-2280-010	3/8	45	16
RV-2280-013	1/2	48	16
RV-2280-019	3/4	53	16
RV-2280-025	1	59	16
RV-2280-032	1.1/4	66	10
RV-2280-038	1.1/2	71	10
RV-2280-050	2	80	10
RV-2280-065	2.1/2	93	8
RV-2280-075	3	104	8
RV-2280-100	4	119	8



#### Spring check valve 2281 type

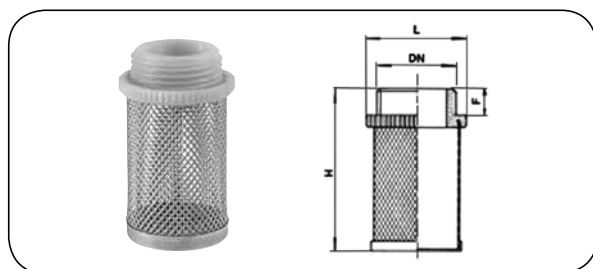
**Body material:** Brass  
**Spring material:** AISI 302 steel  
**Disc material:** Brass  
**Sealing:** Viton  
**Connection:** BSP female thread  
**Min. opening press:** 0.02 bar - 3/8" ÷ 2.1/2"  
                                   0.1 bar - 3" ÷ 4"  
**Working temp.:** From -10°C up to +90°C

A general purpose spring check valve designed for industrial installations. It can be mounted in any position. However, the valve must be mounted according to the flow direction marked on its body. Working pressure depends on working temperature.

code	thread size [inch]	length [mm]	working pressure [bar]
RV-2281-013	1/2	48	35
RV-2281-019	3/4	53	35
RV-2281-025	1	59	35
RV-2281-032	1.1/4	66	25
RV-2281-038	1.1/2	71	25
RV-2281-050	2	80	25
RV-2281-065	2.1/2	93	12
RV-2281-075	3	104	12
RV-2281-100	4	119	12

## INDUSTRIAL FITTINGS - valves

### Check valves and filters

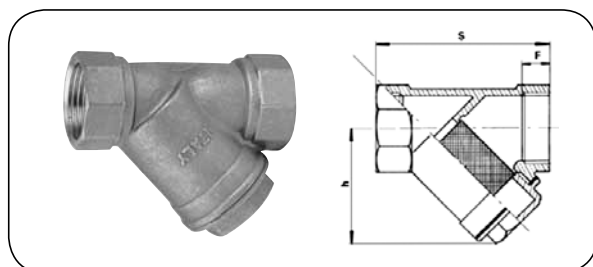


#### Filter 2310 type

**Material:** AISI 304 steel  
**Connection:** BSP male thread  
**Working temp.:** From -10°C up to +90°C

A filter used for spring check valves 2280 and 2281 type.

code	thread size [inch]	dimensions [mm]		
		F	H	L
RV-2310-010	3/8	7	51	23
RV-2310-013	1/2	8	50	26
RV-2310-019	3/4	9	57	32
RV-2310-025	1	9	57	41
RV-2310-032	1.1/4	11	68	48
RV-2310-038	1.1/2	11	78	55
RV-2310-050	2	12	95	68
RV-2310-065	2.1/2	13	98	86
RV-2310-075	3	14	113	99
RV-2310-100	4	14	131	122



#### Y-strainer 2500 type

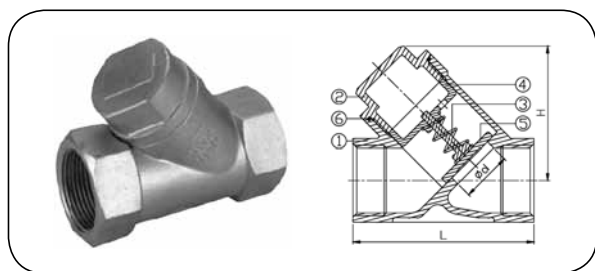
**Body material:** Brass  
**Sealing:** NBR  
**Filter refill:** AISI 304 steel  
**Connection:** BSP female thread  
**Working temp.:** From -10°C up to +90°C  
**Working press.:** 16 bar

A general purpose Y-strainer used in water supply, sanitary, heating, irrigation and industrial systems. The Y-strainer must be mounted according to the flow direction marked on its body. Working pressure depends on working temperature.

code	thread size [inch]	dimensions [mm]		
		F	h	S
RV-2500-013	1/2	11	38	56
RV-2500-019	3/4	11	50	70
RV-2500-025	1	15	59	88
RV-2500-032	1.1/4	15	68	96
RV-2500-038	1.1/2	16	77	106
RV-2500-050	2	19	93	126
RV-2500-065	2.1/2	21	99	133
RV-2500-075	3	22	132	170
RV-2500-100	4	25	170	219

## INDUSTRIAL FITTINGS - valves

### Check valves and filters

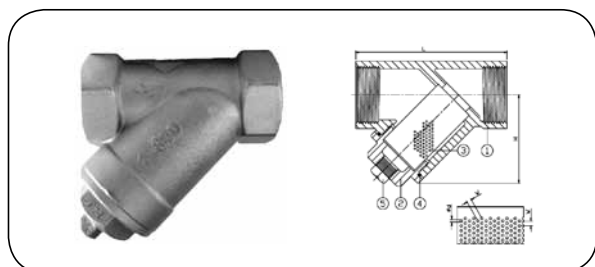


#### Check valve 2050 type

**Body material:** AISI 316 steel  
**Spring material:** AISI 316 steel  
**Disc material:** AISI 316 steel  
**Sealing:** PTFE  
**Connection:** BSP female thread  
**Working temp.:** From -20°C up to +200°C  
**Working press.:** 50 bar

A general purpose check valve designed for blocking the return flow of the medium. The valve must be mounted according to the flow direction marked on its body. Working pressure depends on working temperature.

code	DN [mm]	thread size [inch]	dimensions [mm]		
			d	L	H
HT-2050-08	8	1/4	15	65	46.5
HT-2050-10	10	3/8	15	65	46.5
HT-2050-15	15	1/2	15	65	46.5
HT-2050-20	20	3/4	20	80	68.5
HT-2050-25	25	1	25	90	71
HT-2050-32	32	1.1/4	32	105	74
HT-2050-40	40	1.1/2	38	120	82.5
HT-2050-50	50	2	50	140	95
HT-2050-65	65	2.1/2	65	180	121.3
HT-2050-80	80	3	80	200	138



#### Y-strainer 2049 type

**Body material:** AISI 316 steel  
**Sealing:** PTFE  
**Filter refill:** AISI 316 steel  
**Connection:** BSP female thread  
**Working temp.:** From -20°C up to +200°C  
**Working press.:** 50 bar

Y-strainer designed for water, oil and gas installations. Used for capturing and removal of impurities from the system. The Y-strainer must be mounted according to the flow direction marked on its body. Working pressure depends on working temperature.

code	DN [mm]	thread size [inch]	dimensions [mm]		
			d	L	H
HT-2049-08	8	1/4	15	65	46.5
HT-2049-10	10	3/8	15	65	46.5
HT-2049-15	15	1/2	15	65	46.5
HT-2049-20	20	3/4	20	80	54
HT-2049-25	25	1	25	90	67
HT-2049-32	32	1.1/4	32	105	74
HT-2049-40	40	1.1/2	40	120	81.5
HT-2049-50	50	2	50	140	95
HT-2049-65	65	2.1/2	65	180	121.3
HT-2049-80	80	3	80	200	138

# INDUSTRIAL FITTINGS - valves

## AIGNEP solenoid valves

General purpose valves controlled by an electric current intended for fluids and gases. Four valve series are available: 01F, 02F, 03F and 04F. The body of the valve is made of brass, stem and spring of stainless steel, ferrule of stainless steel (NO type - of brass).

The valves are supplied without solenoids and plugs and as a standard - they must be ordered separately. When selecting a valve, consider the following: medium, temperature and viscosity of the medium, ambient temperature, flow rate, maximum working pressure, differential pressure (pressure difference at closed valve). In the case of doubts or questions concerning valve selection, please contact Technical Department of TUBES INTERNATIONAL®.

Application depends on seal material		
material	working temperature	application
NBR	from -10°C up to +90°C	pneumatic installations (air, inert gases), water (max. up to +75°C), mineral oils, diesel and heating oils
FKM (Viton)	from -10°C up to +140°C	mineral oils, petrol, diesel and heating oils
EPDM	from -10°C up to +140°C	hot water, steam (max. up to 2.5 bar)



### 01F series

**Working press.:** Up to 40 bar

**Ferrule diameter:** 10 mm

**Flow factor Kv:** DN1.5 - 0.06 m³/h

DN2 - 0.09 m³/h

DN2.5 - 0.15 m³/h

DN3 - 0.20 m³/h

DN4 - 0.30 m³/h

**Description:** Direct acting solenoid valve

Valve code structure e.g.: AI-01F-02-1-15-N-0

01F	02	1		15	N	0
series	connection size	no. of connect. and positions	symbol	DN	seal	stem regulation
01F	02 = 1/8" BSP 03 = 1/4" BSP	1 = 2/2NC		15 = 1.5 mm 02 = 2 mm 25 = 2.5 mm 03 = 3 mm 04 = 4 mm	N = NBR E = EPDM V = FKM	0 = no reg.
		2 = 2/2NO				
		3 = 3/2NC*				
		4 = 3/2NO**				

\* - connection size no. 3 (stem): M5, Kv = 0.05 m³/h

\*\* - connection size no. 3 (stem): M5, Kv = 0.05 m³/h; DN sizes available: 1.5 mm, 2 mm, 2.5 mm

## INDUSTRIAL FITTINGS - valves

### AIGNEP solenoid valves



#### 02F series

**Working press.:** Up to 40 bar  
**Ferrule diameter:** 13 mm  
**Flow factor Kv:** DN4 - 0.35 m<sup>3</sup>/h  
                           DN5 - 0.51 m<sup>3</sup>/h  
**Description:** Direct acting solenoid valve

Valve code structure e.g.: AI-02F-02-1-04-N-0

02F	03	1		04	N	0
series	connection size	no. of connect. and positions	symbol	DN	seal	stem regulation
02F	03 = 1/4" BSP	1 = 2/2NC		04 = 4 mm 05 = 5 mm	N = NBR E = EPDM V = FKM	0 = no reg.
		2 = 2/2NO				
		3 = 3/2NC*				
		4 = 3/2NO*				

\* - connection size no. 3 (stem): M5, Kv = 0.1 m<sup>3</sup>/h



# INDUSTRIAL FITTINGS - valves

## AIGNEP solenoid valves



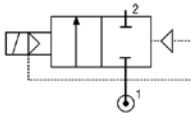
### 03F series

**Working press.:** Up to 25 bar

**Ferrule diameter:** 13 mm

**Description:** Direct acting, membrane solenoid valve

Valve code structure e.g.: AI-03F-04-1-12-N-0

03F	04	1		12		N	0
series	connection size	no. of connect. and positions	symbol	DN	Kv [m³/h]	seal	stem regulation
03F	03 = 1/4" BSP	1 = 2/2NC		10 = 10 mm	1.58	N = NBR E = EPDM V = FKM	0 = no reg.
	04 = 3/8" BSP			12 = 12 mm	2.34		
	05 = 1/2" BSP			14 = 14 mm	2.73		
	07 = 3/4" BSP			12 = 12 mm	2.36		
	09 = 1" BSP			14 = 14 mm	2.75		
				18 = 18 mm	4.08		
				25 = 25 mm	6.63		



### Solenoid valve connectors

**Degree of protection:** IP67 IEC 60529

series	code	cable Ø [mm]	size [mm]	type	colour
01F / 04F	AI-CON01-000-01	6 ÷ 8	22	2-pin	black
01F / 02F / 03F / 04F	AI-CON31-000-01	6 ÷ 8 / 8 ÷ 11	30 ÷ 36	2-pin	black

# INDUSTRIAL FITTINGS - valves

## AIGNEP solenoid valves



### 04F series

**Working press.:** Up to 25 bar

**Ferrule diameter:** 10 mm

**Description:** Indirect acting, membrane solenoid valve

Valve code structure e.g.: AI-04F-04-1-12-N-0

04F	04	1		12		N	0
series	connection size	no. of connect. and positions	symbol	DN	Kv [m³/h]	seal	stem regulation
04F	03 = 1/4" BSP	1 = 2/2NC		10 = 10 mm	1.88	N = NBR E = EPDM V = FKM	0 = no reg. 1 = with reg.*
	04 = 3/8" BSP			12 = 12 mm	2.90		
				14 = 14 mm	3.32		
	05 = 1/2" BSP			12 = 12 mm	3.03		
				14 = 14 mm	3.53		
	07 = 3/4" BSP			18 = 18 mm	5.56		
	09 = 1" BSP			25 = 25 mm	10.97		
	03 = 1/4" BSP	2 = 2/2NO		10 = 10 mm	1.88		
	04 = 3/8" BSP			12 = 12 mm	2.90		
				14 = 14 mm	3.32		
	05 = 1/2" BSP			12 = 12 mm	3.03		
				14 = 14 mm	3.53		
	07 = 3/4" BSP			18 = 18 mm	5.56		
	09 = 1" BSP			25 = 25 mm	10.97		

\* - sizes available with stem regulation: 3/4" BSP, 1" BSP



# INDUSTRIAL FITTINGS - valves

## AIGNEP solenoid valves



### Solenoids for solenoid valves

**Degree of protection:** IP67 IEC 60529  
**Insulation class:** H CEI EN 60085  
**Connection:** AMP for 22 mm size  
 DIN 43650 for 30 ÷ 36 mm size  
**Voltage tolerance:** ±10%  
**Working temp.:** -10°C ÷ +80°C

series	code	assembly diameter [mm]	size [mm]	nominal voltage [V]	power
01F / 04F	AI-SOL10-012-C-4	10	22	12V DC	6.5 W
01F / 04F	AI-SOL10-024-C-4		22	24V DC	6.5 W
01F / 04F	AI-SOL11-012-C-5		30	12V DC	8 W
01F / 04F	AI-SOL11-024-C-5		30	24V DC	8 W
01F / 04F	AI-SOL10-024-A-8		22	24V AC	7.5 VA
01F / 04F	AI-SOL10-110-A-8		22	110V AC	7.5 VA
01F / 04F	AI-SOL10-220-A-8		22	220V AC	7.5 VA
01F / 04F	AI-SOL11-024-A-9		30	24V AC	11 VA
01F / 04F	AI-SOL11-110-A-9		30	110V AC	11 VA
01F / 04F	AI-SOL11-220-A-9		30	220V AC	11 VA
02F	AI-SOL20-012-C-5	13	30	12V DC	8 W
02F	AI-SOL20-024-C-5		30	24V DC	8 W
02F / 03F	AI-SOL20-012-C-6		30	12V DC	14 W
02F / 03F	AI-SOL20-024-C-6		30	24V DC	14 W
02F / 03F	AI-SOL21-012-C-7		36	12V DC	22 W
02F / 03F	AI-SOL21-024-C-7		36	24V DC	22 W
02F / 03F	AI-SOL20-024-A-A		30	24V AC	14 VA
02F / 03F	AI-SOL20-110-A-A		30	110V AC	14 VA
02F / 03F	AI-SOL20-220-A-A		30	220V AC	14 VA
02F / 03F	AI-SOL20-024-A-B		30	24V AC	21 VA
02F / 03F	AI-SOL20-110-A-B		30	110V AC	21 VA
02F / 03F	AI-SOL20-220-A-B		30	220V AC	21 VA
02F / 03F	AI-SOL21-024-A-C		36	24V AC	31 VA
02F / 03F	AI-SOL21-110-A-C		36	110V AC	31 VA
02F / 03F	AI-SOL21-220-A-C		36	220V AC	31 VA




## Safety valves

Safety valve automatically discharges a medium when the pressure exceeds a predetermined value (set pressure) thus securing a pressure tank or system from bursting out. Once the pressure is stabilized below its set value, the safety valve closes and the medium is not further released. According to Pressure Equipment Directive (PED) 2014/68/UE this type of safety valve is regarded as a protective device. The safety valves offered by TUBES INTERNATIONAL® are suitable for inert and non-inert media, including air gases, steam, fluids (also cryogenic fluids).


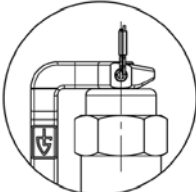
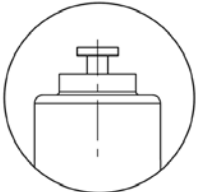
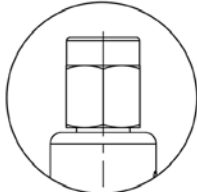
**Note!**

The precise value of valve working pressure is set by the producer, then the valve is sealed. The set pressure value is imprinted as a marking on the valve body. Once the range of the valve working pressure is selected, the set pressure value must be determined. The diameter of a hose supplying the system equipped with the safety valve must not be smaller than the DN of the valve. Also, the pressure drop between the supplying hose and the valve must not exceed 3%. In order to check if the valve works properly, carry out a functional test either by turning a nut (twist-type mechanism) or by lifting either the lever or stem, depending on the lifting device. Any repairs can only be carried out by the manufacturer.

As the construction of discharge outlets varies, the safety valves are divided into the following types:

open construction (atmospheric discharge)	enclosed construction (angle)	enclosed construction - tight (angle) - gastight valves
When the valve opens, the medium is discharged directly to the atmosphere, vented through the discharge holes.	The valve with a discharge connection allows releasing the medium from the outlet chamber into the discharge piping.	Suitable for hazardous media and those harmful to the environment. The valves must be gastight so they do not have a test function.
		

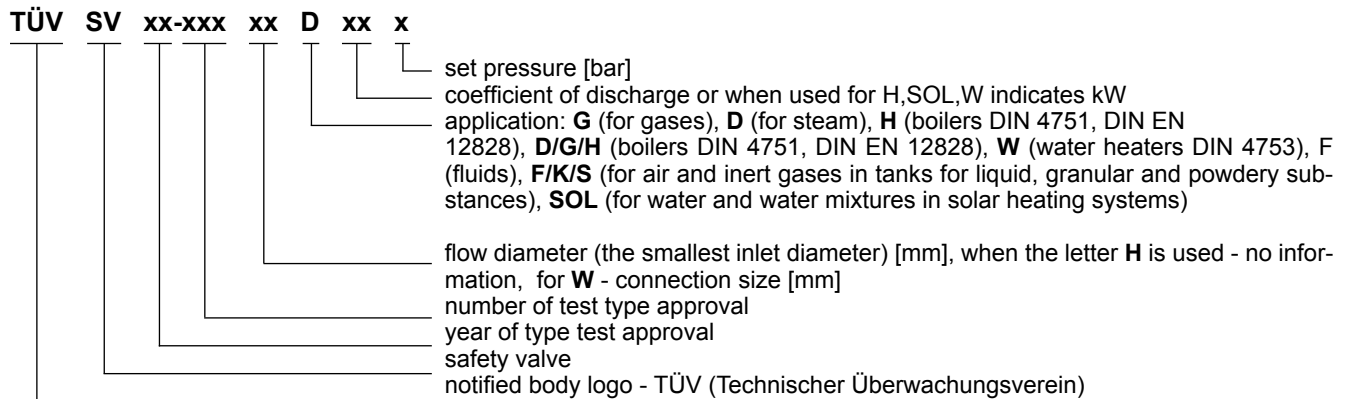
Functional test types:

twist-type mechanism (turning the nut)	lever (lifting the lever)	stem (lifting the stem)	no test function
			

Note! Remember to carry out the functional test only when the system is under pressure - working pressure.

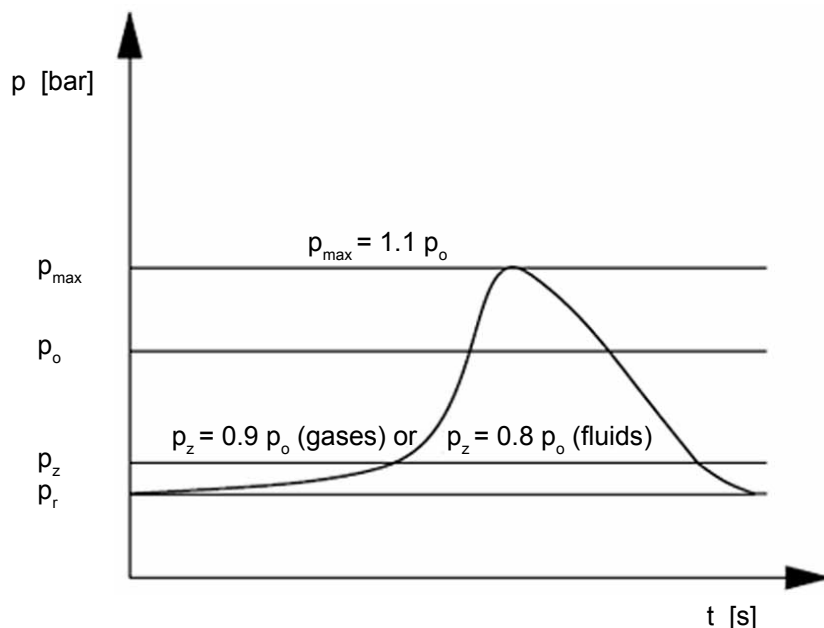
## Safety valves

Marking of safety valves (example of GOETZE safety valve):



Example of EWO safety valve marking: **CE0685 SV 02 2 8 D/G 0.32 P** (CE0685 - DEKRA technical inspection, P - set pressure).

Valve operation - definitions:



- $p_r$  - working pressure of a system / safety device,
- $p_z$  - closing pressure - the pressure at which the valve closes tight - basically the valve is fully closed, when the pressure drops down to 10% below the set pressure for gases, and down to 20% for fluids,
- $p_o$  - set pressure - the pressure at which the safety valve commences to open (usually the tolerance value of up to  $\pm 3\%$  is assumed at the start of opening),
- $p_{max}$  - max. opening pressure - the pressure at which the disc of the valve is fully lifted (discharge pressure) - the valve achieves the maximum flow capacity.

Example of the valve with 12 bar set pressure:

- set pressure - the start of opening - 12 bar  $\pm 3\%$ ,
- pressure at which the valve is fully opened (up to +10% of set pressure) - max. 13.2 bar,
- closing pressure (down to -10% in the case of gases and down to -20% for fluids) - max. 10.8 bar, (gas) or max. 9.6 bar (fluid).

**Note!**

The working pressure of a system must be always lower than the valve closing pressure.

# INDUSTRIAL FITTINGS - valves

## Safety valves



### EWO DN6 safety valve

**Body material:** Brass  
**Sealing:** Viton  
**Connection:** BSP male thread  
**Max. opening press.:** Up to +10% of set press.  
**Closing press.:** Down to -10% of set press.  
**Working temp.:** From -10°C up to +150°C  
**Test function:** Lifting the stem  
**Medium:** Air, inert, non-toxic and non-flammable gases

code	flow DN [mm]	thread size [inch]	length [mm]	spanner size [mm]	setting range [bar]
EW-46923	6	1/4	65	17	4.5 ÷ 7.0
EW-46924					7.0 ÷ 10.0
EW-46925					10.0 ÷ 13.0
EW-46926					13.0 ÷ 18.0
EW-46927					18.0 ÷ 24.0
EW-46933		3/8	19	19	4.5 ÷ 7.0
EW-46934					7.0 ÷ 10.0
EW-46935					10.0 ÷ 13.0
EW-46936					13.0 ÷ 18.0
EW-46937					18.0 ÷ 24.0

discharge capacity (when valve is opened or pressure rises by 10% above set press.)		
set pressure [bar]	capacity [m³/h]	capacity [l/min]
6	45.5	763
10	92	1540
11	100	1681
14	126	2104
16	143	2387
18	160	2696
20	177	2551
22	194	3234
24	211	3516



### EWO DN10 safety valve

**Body material:** Brass  
**Sealing:** Viton  
**Connection:** BSP male thread  
**Max. opening press.:** Up to +10% of set press.  
**Closing press.:** Down to -10% of set press. (below 3 bar ≤ 0.3 bar)  
**Working temp.:** From -10°C up to +180°C  
**Test function:** Twist - type  
**Medium:** Air, inert, non-toxic and non-flammable gases

code	flow DN [mm]	thread size [inch]	length [mm]	spanner size [mm]	setting range [bar]
EW-351261	10	1/2	120	27	2.0 ÷ 3.6
EW-351262					3.6 ÷ 5.0
EW-351263					5.0 ÷ 7.0
EW-351264					7.0 ÷ 8.5
EW-351265					8.5 ÷ 11.5
EW-351266					11.5 ÷ 16.0
EW-351267					16.0 ÷ 22.0
EW-351271		3/4	120	30	2.0 ÷ 3.6
EW-351272					3.6 ÷ 5.0
EW-351273					5.0 ÷ 7.0
EW-351274					7.0 ÷ 8.5
EW-351275					8.5 ÷ 11.5
EW-351276					11.5 ÷ 16.0
EW-351277					16.0 ÷ 22.0

discharge capacity (when valve is opened or pressure rises by 10% above set press.)		
set pressure [bar]	capacity [m³/h]	capacity [l/min]
2	74.5	1242
4	124	2068
6	174	2895
8	223	3722
10	273	4548
12	323	5377
14	372	6203
16	422	7032
18	471	7858
20	521	8685
22	571	9513

# INDUSTRIAL FITTINGS - valves

## Safety valves



### EWO DN8 safety valve

**Body material:** Brass  
**Sealing:** Viton  
**Connection:** BSP male thread  
**Max. opening press.:** Up to +10% of set press.  
**Closing press.:** Down to -10% of set press.  
 (below 3 bar ≤ 0.3 bar)  
**Working temp.:** From -10°C up to +180°C  
**Test function:** Twist - type  
**Medium:** Air, inert, non-toxic and non-flammable gases

code	flow DN [mm]	thread size [inch]	length [mm]	spanner size [mm]	setting range [bar]
EW-351221	8	1/4	85	20	1.0 ÷ 1.5
EW-351222					1.5 ÷ 2.0
EW-351223					2.0 ÷ 3.0
EW-351224					3.0 ÷ 5.0
EW-351225					5.0 ÷ 7.0
EW-351226					7.0 ÷ 9.0
EW-351227					9.0 ÷ 15
EW-351421			90		15.0 ÷ 20.0
EW-351422					20.0 ÷ 27.0
EW-351423					27.0 ÷ 40.0
EW-351241		3/8	85		1.0 ÷ 1.5
EW-351242					1.5 ÷ 2.0
EW-351243					2.0 ÷ 3.0
EW-351244					3.0 ÷ 5.0
EW-351245					5.0 ÷ 7.0
EW-351246					7.0 ÷ 9.0
EW-351247					9.0 ÷ 15.0
EW-351441			90		15.0 ÷ 20.0
EW-351442					20.0 ÷ 27.0
EW-351443					27.0 ÷ 40.0
EW-351251		1/2	87	24	1.0 ÷ 1.5
EW-351252					1.5 ÷ 2.0
EW-351253					2.0 ÷ 3.0
EW-351254					3.0 ÷ 5.0
EW-351255	5.0 ÷ 7.0				
EW-351256	7.0 ÷ 9.0				
EW-351257	9.0 ÷ 15.0				
EW-351451	92		15.0 ÷ 20.0		
EW-351452			20.0 ÷ 27.0		
EW-351453			27.0 ÷ 40.0		

discharge capacity (when valve is opened or pressure rises by 10% above set press.)		
set pressure [bar]	capacity [m³/h]	capacity [l/min]
1	23.5	394
2	35.5	592
4	59	985
6	63	1380
8	106	1773
10	130	2168
12	154	2562
14	177	2957
16	201	3350
18	225	3745
20	248	4138
22	272	4533
25	307	5124
30	367	6110
35	426	7095
40	485	8080

## Safety valves



### 810 series safety valve

<b>Body material:</b>	Brass and stainless steel
<b>Sealing:</b>	FKM (set press. 0.2 ÷ 25 bar), PTFE (set press. 25.1 ÷ 50 bar) PTFE (set press. 0.2 ÷ 25 bar) - option
<b>Connection:</b>	BSP male thread (BSPT - option)
<b>Connection size:</b>	1/4", 3/8", 1/2", 3/4", 1"
<b>Diameter DN:</b>	DN8, DN10, DN15, DN20, DN25
<b>Setting range:</b>	0.2 ÷ 50 bar
<b>Max. opening press.:</b>	Up to +10% of set press.
<b>Closing press.:</b>	Down to -10% of set press.
<b>Working temp.:</b>	From -20°C up to +200°C (FKM) From -60°C up to +225°C (PTFE)
<b>Test function:</b>	Twist - type
<b>Medium:</b>	Air, inert, non-toxic and non-flammable gases

810 series atmospheric discharge safety valves allow releasing air and other inert gases directly into the atmosphere. They are chiefly used in compressors, pressure boosters, pneumatic control units, railway applications, auto paint shops.

The safety valves meet the requirements of DIN EN ISO 4126-1, PED 2014/68/EU, AD 2000 data sheet A2.



### 812 series safety valve

<b>Body material:</b>	Brass and stainless steel
<b>Sealing:</b>	NBR (FKM - option) PTFE (option - from 1 bar set press)
<b>Connection:</b>	BSP male thread (BSPT, NPT - option)
<b>Connection size:</b>	1/2", 3/4", 1", 1.1/4", 1.1/2", 2"
<b>Diameter DN:</b>	DN15, DN20, DN25, DN32, DN40, DN50
<b>Setting range:</b>	0.2 ÷ 50 bar (DN15 ÷ DN40) 0.2 ÷ 30 bar (DN50)
<b>Max. opening press.:</b>	Up to +10% of set press.
<b>Closing press.:</b>	Down to -10% of set press.
<b>Working temp.:</b>	From -30°C up to +130°C (NBR) From -20°C up to +200°C (FKM) From -60°C up to +225°C (PTFE)
<b>Test function:</b>	Twist - type
<b>Opcja:</b>	Deflektor
<b>Medium:</b>	Air, inert, non-toxic and non-flammable gases

812 series atmospheric discharge safety valves are intended for air and other inert gases which can be released directly into the atmosphere. Mainly used in pneumatic control units, pressure boosters, railway applications, auto paint shops, pneumatic braking systems. The safety valves meet the requirements of DIN EN ISO 4126-1, PED 2014/68/EU, AD 2000 data sheet A2.

## Safety valves



### 813 series safety valve

<b>Body material:</b>	Brass and stainless steel
<b>Sealing:</b>	FKM, PTFE (option - from 1 bar set press.)
<b>Connection:</b>	BSP male thread (BSPT, NPT - option)
<b>Connection size:</b>	1/2", 3/4", 1", 1.1/4", 1.1/2", 2"
<b>Diameter DN:</b>	DN15, DN20, DN25, DN32, DN40, DN50
<b>Setting range:</b>	0.2 ÷ 6 bar
<b>Max. opening press.:</b>	Up to +10% of set press.
<b>Closing press.:</b>	Down to -10% of set press.
<b>Working temp.:</b>	From -20°C up to +200°C (FKM) From -60°C up to +225°C (PTFE)
<b>Test function:</b>	Twist - type
<b>Medium:</b>	Air and inert gases in tanks containing liquid, granular and powdery substances (F/K/S).

813 series atmospheric discharge safety valve fitted with a diaphragm intended for air and other inert gases. Mounted mainly in silos, stationary pressure tanks intended for dry loose media. But they are also used by the producers of dry bulk road tankers and companies providing service for the tankers. Besides, they are applied in auto paint shops and compressed air installations working in dusty environment. The safety valves meet the requirements of DIN EN ISO 4126-1, PED 2014/68/EU, AD 2000 data sheet A2, TRB 801 No. 22 and No.23.



### 851 series safety valve

<b>Body material:</b>	Bronze, brass and stainless steel
<b>Sealing:</b>	NBR, EPDM, FKM, PTFE (set press. up to 25 bar) PTFE + carbon (set press. above 25 bar) metal - metal (option)
<b>Connection:</b>	BSP female thread BSP female/male thread - option BSP female / BSPT male thread - option
<b>Connection size:</b>	1/2", 3/4", 1", 1.1/4", 1.1/2", 2"
<b>Diameter DN:</b>	DN15, DN20, DN25, DN32
<b>Setting range:</b>	0.5 ÷ 50 bar
<b>Max. opening press.:</b>	Up to +10% of set press.
<b>Closing press.:</b>	Down to -10% of set press. for gases Down to -20% of set press. for fluids
<b>Working temp.:</b>	From -30°C up to +130°C (NBR) From -40°C up to +170°C (EPDM) From -20°C up to +200°C (FKM) From -60°C up to +225°C (PTFE, PTFE + carbon, metal - metal)
<b>Test function:</b>	Twist - type, lever
<b>Medium:</b>	Air, vapour, gases, steam and fluids depending on version

851 series safety valves are of enclosed construction (angle type). Four versions are available: non-gastight, with a bellow, gastight and gastight with a bellow. The valves secure pressure tanks and pressure systems for inert and non-inert vapours, gases and fluids, steam boilers, steam systems, stationary silos and road tanker trucks conveying fluids, dry bulk and powdery media (concerns version with a bellow). They are used in mechanical engineering, pumps, medical devices and medical technology (sterilizers, autoclaves), shipbuilding industry (ship building/repair), pressure boosters.

The safety valves meet the requirements of DIN EN ISO 4126-1, PED 2014/68/EU, AD 2000 data sheet A2, TRD 421, TRB 801 No. 22 and No. 23.

## Safety valves



### 413 series safety valve

<b>Body material:</b>	Stainless steel
<b>Sealing:</b>	FKM, PTFE (option - from 1 bar set press.)
<b>Connection:</b>	BSP male thread (BSPT, NPT - option)
<b>Connection size:</b>	1/2", 3/4", 1", 1.1/4", 1.1/2", 2"
<b>Diameter DN:</b>	DN15, DN20, DN25, DN32, DN40, DN50
<b>Setting range:</b>	0.2 ÷ 6 bar
<b>Max. opening press.:</b>	Up to +10% of set press.
<b>Closing press.:</b>	Down to -10% of set press. for gases
<b>Working temp.:</b>	From -20°C up to +200°C (FKM) From -60°C up to +225°C (PTFE)
<b>Test function:</b>	Twist - type
<b>Medium:</b>	Air and inert gases in tanks containing liquid, granular and powdery substances (F/K/S).

413 series atmospheric discharge safety valve fitted with a diaphragm intended for air and other inert gases. Mounted mainly in silos, stationary pressure tanks intended for dry loose media. The safety valves are also used by the producers of dry bulk road tankers and companies providing service for the tankers. Besides, they are suitable for the food industry, pharmaceutical industry and cosmetics industry application. The safety valves meet the requirements of DIN EN ISO 4126-1, PED 2014/68/EU, AD 2000 data sheet A2, TRB 801 No. 22 and No. 23.



### 460 series safety valve

<b>Body material:</b>	Stainless steel
<b>Sealing:</b>	NBR, EPDM, FKM, PTFE (set press. from 0.5 bar)
<b>Connection:</b>	BSP male / female thread BSPT male / BSP female thread (option) NPT male / BSP female thread (option)
<b>Connection size:</b>	3/8", 1/2", 3/4", 1"
<b>Diameter DN:</b>	DN10, DN15, DN20, DN25
<b>Setting range:</b>	0.2 ÷ 25 bar
<b>Max. opening press.:</b>	Up to +10% of set press.
<b>Closing press.:</b>	Down to -10% of set press. for gases Down to -20% of set press. for fluids
<b>Working temp.:</b>	From -30°C up to +130°C (NBR) From -50°C up to +150°C (EPDM) From -20°C up to +200°C (FKM) From -60°C up to +225°C (PTFE)
<b>Test function:</b>	Lever
<b>Medium:</b>	Air, vapour, gases, steam and fluids depending on version

460 series safety valves are of enclosed construction. Optionally available as a gastight version. They are suitable for the protection of pressure tanks and systems for inert and non-inert vapours, gases and fluids, steam boilers, steam systems. Suitable for the application in chemical plants, biogas plants, in shipbuilding industry, offshore, desalination systems. After checking with Technical Department of TUBES INTERNATIONAL® the valves can be used in the food industry, pharmaceutical industry and cosmetics industry. The safety valves meet the requirements of DIN EN ISO 4126-1, PED 2014/68/EU, AD 2000 data sheet A2, TRD 421.



## Safety valves



### 451 series safety valve

<b>Body material:</b>	Stainless steel
<b>Sealing:</b>	NBR, EPDM, FKM, PTFE (set press. up to 25 bar) PTFE + carbon (set press. above 25 bar) metal - metal (option)
<b>Connection:</b>	BSP female thread BSP male / female thread (option) BSPT male / BSP female thread (option)
<b>Connection size:</b>	1/2", 3/4", 1", 1.1/4", 1.1/2", 2"
<b>Diameter DN:</b>	DN15, DN20, DN25, DN32
<b>Setting range:</b>	0.5 ÷ 70 bar
<b>Max. opening press.:</b>	Up to +10% of set press.
<b>Closing press.:</b>	Down to -10% of set press. for gases Down to -20% of set press. for fluids
<b>Working temp.:</b>	From -30°C up to +130°C (NBR) From -40°C up to +170°C (EPDM) From -20°C up to +200°C (FKM) From -60°C up to +225°C (PTFE) From -60°C up to +400°C (metal - metal)
<b>Test function:</b>	Twist - type
<b>Medium:</b>	Air, vapour, gases, steam and fluids depending on version

451 series safety valves are of enclosed construction. Four versions are available: non-gastight, with a bellow, gastight and gastight with a bellow. The valves secure pressure tanks and pressure systems for inert and non-inert vapours, gases and fluids, steam boilers, steam systems, road tankers conveying fluids and dry bulk media (concerns version with a bellow). They are used in chemical plants, biogas plants, medical devices and medical technology (sterilizers, autoclaves). After checking with Technical Department of TUBES INTERNATIONAL®, the valves can be used in the food industry, pharmaceutical industry and cosmetics industry. The safety valves meet the requirements of DIN EN ISO 4126-1, PED 2014/68/EU, AD 2000 data sheet A2, TRD 421, TRB 801 No. 22 and No. 23.



### 492 series safety valve

<b>Body material:</b>	Stainless steel and VDSiCr spring steel
<b>Sealing:</b>	Metal-metal / PA
<b>Connection:</b>	BSP male thread (standard - atmospheric discharge valves), BSP male/ female thread (gastight version - angle valve)
<b>Connection size:</b>	1/4", 3/8", 1/2", 3/4" (inlet) 1/2", 3/4", 1" (outlet)
<b>Diameter DN:</b>	DN10, DN15
<b>Setting range:</b>	50 ÷ 630 bar (DN10), 50 ÷ 250 bar (DN15)
<b>Max. opening press.:</b>	Up to +10% of set press.
<b>Closing press.:</b>	Down to -10% of set press.
<b>Working temp.:</b>	From -60°C up to +180°C
<b>Test function:</b>	Twist - type (for standard version only)
<b>Medium:</b>	Air, inert gases, non-toxic and non-flammable (standard version), inert and non-inert gases (angle valves)

492 series safety valves are available in a standard version (atmospheric discharge) and as a gastight version (enclosed construction valves). The gastight version valves are not suitable for counter pressure and do not have a test function lifting device. Suitable for high pressure compressors, pressure tanks, pressure cylinders. Not intended for steam.

The safety valves meet the requirements of DIN EN ISO 4126-1, PED 2014/68/EU, AD 2000 data sheet.

## Safety valves



### 2400 series safety valve

<b>Body material:</b>	Stainless steel
<b>Sealing:</b>	PTFE (FDA approval), PTFE + carbon
<b>Connection:</b>	BSP male / female thread BSP female thread (option) NPT male / BSP female thread (option)
<b>Connection size:</b>	1/4", 3/8", 1/2", 3/4", 1" (inlet) 3/8", 1/2", 3/4", 1" (outlet)
<b>Diameter DN:</b>	DN10, DN15, DN20, DN25
<b>Setting range:</b>	0.2 ÷ 70 bar
<b>Max. opening press.:</b>	Up to +10% of set press.
<b>Closing press.:</b>	Down to -10% of set press. for gases Down to -20% of set press. for fluids
<b>Working temp.:</b>	From -200°C up to +200°C
<b>Test function:</b>	Only for non-gastight version, twist-type or lever
<b>Medium:</b>	Cryogenic gases, vapours, fluids

2400 series safety valves are of enclosed construction. Available in a non-gastight version for inert media and in a gastight version for inert and non-inert gases. Intended for the protection of tanks and pipelines for the storage and transport of such liquefied gases as liquid oxygen (LOX), liquid nitrogen (LIN), liquid argon (LAR), liquid carbon dioxide (CO), LNG. Suitable for dry ice production equipment, nitrogen dosing, cryogenic machining, in cryogenic systems, in food products freezing processing lines.

The safety valves meet the requirements of DIN EN ISO 4126-1, PED 2014/68/EU, AD 2000 data sheet A2, DIN EN 13648-1.



### 400 series safety valve

<b>Body material:</b>	Stainless steel and VDSiCr spring steel
<b>Sealing:</b>	FKM (FDA, USP 3-A, material free of components of animal origin), EPDM (FDA)
<b>Connection:</b>	Hygienic flanged connected by DIN11864-3 / DIN11853-3, DIN32676 (option) clamps Hygienic screwed with Rd thread DIN11864-1/DIN11853-1 (option), DIN 11851(option)
<b>Connection size:</b>	Dep. on version DN20, DN25, DN32 (inlet) Dep. on version DN25, DN32 (outlet)
<b>Diameter DN:</b>	DN20
<b>Setting range:</b>	0.4 ÷ 16 bar
<b>Max. opening press.:</b>	Up to +10% of set press.
<b>Closing press.:</b>	Down to -10% of set press. for gases Down to -20% of set press. for fluids
<b>Working temp.:</b>	From -20°C up to +200°C (FKM) From -40°C up to +170°C (EPDM)
<b>Test function:</b>	Twist - type
<b>Medium:</b>	Air, vapour, gases, fluids and depending on version - steam

400 series safety valves are of enclosed construction. Optionally available with a bellows. Intended for the protection of processes, pressure systems, tanks used for inert and non-inert vapours, gases, fluids and steam in the food, pharmaceutical industry and cosmetics industry.

The safety valves meet the requirements of DIN EN ISO 4126-1, PED 2014/68/EU, AD 2000 data sheet A2, TRD 421.

## INDUSTRIAL FITTINGS - valves



### EWO shut-off and regulating valve

**Material:** Brass  
**Working temp.:** From -10°C up to +90°C  
**Working press.:** 25 bar for DN 3.5 mm  
 40 bar for DN from 4 mm

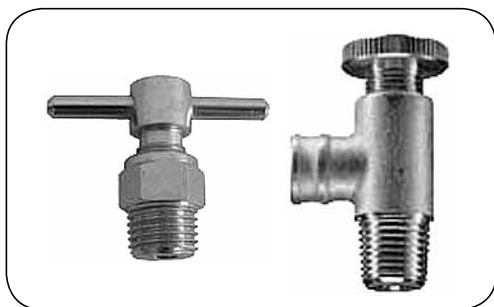
Shut-off and regulating valves are used to control the flow rate of a medium in a system by changing the size of passage cross section in the valve until it is completely closed. Widely used for air applications. Suitable for non-flammable and non-toxic gases (nitrogen, carbon dioxide, helium, argon) as well.

The valve is manually closed by turning a knob which causes movement of a stainless steel ball until the passage is tight. NBR O-ring seals the spindle of the valve.

Regulating needle valve is equipped with a brass cone that controls the flow of a medium from a wide open position to closed position. Arrows on the body indicate flow direction.

picture	code	thread size [inch]	DN [mm]	dimensions [mm]				description
				L	i	H	d	
	EW-29601	1/8	3.5	35	7	30	22	Straight shut-off valve with male thread.
	EW-29611	1/4	3.5	34	8	30	22	
	EW-55612	1/4	6	43	10	50	48	
	EW-55614	3/8	10	52	12	50	48	
	EW-55616	1/2	10	64	14	54	48	
	EW-55622	1/4	6	43	11	50	48	Straight shut-off valve with female thread.
	EW-55624	3/8	9	52	12	50	48	
	EW-55626	1/2	11	63	15	57	48	
	EW-29501	1/8	3.5	34	7	26	22	90° shut-off valve with male thread.
	EW-29511	1/4	3.5	34	8	26	22	
	EW-55812	1/4	4	42	11	52	50	Straight regulating needle valve with male thread.
	EW-55814	3/8	4	42	11	52	50	
	EW-55816	1/2	11	65	15	60	50	
	EW-55822	1/4	4	42	12	50	50	Straight regulating needle valve with female thread.
	EW-55824	3/8	4	51	13	50	50	
	EW-55826	1/2	11	64	15	50	50	

## INDUSTRIAL FITTINGS - valves



### EWO drain valves

**Material:** Brass, nickel-plated brass  
**Working temp.:** From 0°C up to +90°C  
**Working press.:** 25 bar

Drain valves are used for letting air out in order to balance the pressure in an installation. Also used to remove condensate. Compressed air can contain steam which upon condensation changes into a mixture of water and oil called condensate. If the condensate is not removed, the break-down of installation or compressed air units is possible.

picture	code	thread size [inch]	DN [mm]	dimensions [mm]				description
				L	i	d	SW	
	EW-16602	1/8	5	43	9	20	-	90° drain valve with soft seal made of NBR.
	EW-16612	1/4	5	43	12	20	-	
	EW-21201	1/8	5	35	7	40	12	Straight drain valve with metal-metal seal.
	EW-16811	1/4	5	35	10	42	14	



### EWO air distributor

**Material:** Brass  
**Working temp.:** From -10°C up to +90°C  
**Working press.:** 40 bar

An air distributor allows to place two or three shut-off valves that can be closed individually whenever required. Equipped with two shut-off valves and two outlets either with two male threads or hose tails.

picture	code	thread size [inch]	DN [mm]	dimensions [mm]				description
				L	i	H	d	
	EW-559621	1/4	6	79	9	110	25	Air distributor with 6 mm hose tail.
	EW-559631	3/8	6	79	9	110	25	Air distributor with 9 mm hose tail.
	EW-559121	1/4	6	79	9	65	25	With male thread outlets
	EW-559131	3/8	6	79	9	65	25	

# INDUSTRIAL FITTINGS - clips, clamps, ferrules

## Band-It® banding assembly system

Band-It® banding assembly system is designed to attach a fitting to an industrial hose by tightening a steel band on the hose. Made of stainless or acid resistant steel, Band-It® system can be used in particularly heavy duty working conditions such as: very big mechanical loads, vibrations, fire hazard, corrosive environment, very high or low temperatures, UV radiation, application with special hygienic requirements.



Using special assembly tools the bands are fastened and locked with appropriate buckles to make a clamp of high durability and mechanical resistance. In order to select the band, take into account: external hose diameter, fitting type and dimensions (length of a „tail“, number of corrugations and distance between them) but also the working pressure of the hose assembly. Depending on all these parameters, one, two or three bands can be applied.




### Band-It® Standard

A basic banding system utilizes reels of steel band that can be fastened to form clamps on hoses of any diameter (double band wrap is recommended). The ears of buckles protect the end of the band after folding. GIANT version for heavy duty application (for large diameter hoses - above 150 mm).

Assembly with BD-C07599, BD-C00189, BD-C00399 tools, for GIANT band - BD-G40299.

picture	code (AISI 201)	code (AISI 304)	code (AISI 316)	band width [inch]	strength [kG]			length [m]
					201	304	316	
	STANDARD							
	BD-C20299	-	BD-C40299	1/4	230	-	180	30.5
	BD-C20399	BD-C92399	BD-C40399	3/8	410	410	340	30.5
	BD-C20499	BD-C92499	BD-C40499	1/2	680	610	545	30.5
	BD-C20599	BD-C92599	BD-C40599	5/8	850	725	680	30.5
	BD-C20699	BD-C92699	BD-C40699	3/4	1020	910	820	30.5
	GIANT							
	BD-G43099	-	-	3/4	1500	-	-	30.5
	BD-G43199	-	-	1	2000	-	-	30.5
	BD-G43299	-	-	1.1/4	2500	-	-	30.5
	STANDARD							
	BD-C203Y	BD-C923Y	BD-C403Y	3/8	410	410	340	30.5
	BD-C204B	BD-C924B	BD-C404B	1/2	680	610	545	30.5
	BD-C205G	BD-C925G	BD-C405G	5/8	850	725	680	30.5
	BD-C206R	BD-C926R	BD-C406R	3/4	1020	910	820	30.5

picture	code (AISI 201)	code (AISI 304)	code (AISI 316)	band width [inch]	package [pcs]
	STANDARD				
	BD-C25299	BD-C95299	BD-C45299	1/4	100
	BD-C25399	BD-C95399	BD-C45399	3/8	100
	BD-C25499	BD-C95499	BD-C45499	1/2	100
	BD-C25599	BD-C95599	BD-C45599	5/8	100
	BD-C25699	BD-C95699	BD-C45699	3/4	100
	GIANT				
	BD-G44099	-	-	3/4	25
	BD-G44199	-	-	1	25
	BD-G44299	-	-	1.1/4	25


# INDUSTRIAL FITTINGS - clips, clamps, ferrules

## Band-It® banding assembly system



### Band-It® Junior

A banding system that comprises band in pieces preformed to make double wrap clamps with built-in buckles. The smooth band properly mounted on a smooth, uncorrugated hose ensures tight connection of a fitting which reduces leaks paths into a clamp itself. Assembly with BD-C00189 tool and BD-J00199 adapter.

picture	code (AISI 201)	code (AISI 316)	band width [inch]	band thickness [mm]	maximum diameter wrap [mm]	package [pcs]
<div>Band (a double wrap clamp with a built-in buckle)</div> 	BD-JS2409	-	1/4	0.51	20	100
	BD-JS2429	-			25	100
	BD-JS2419	-			34	100
	BD-JS2529	-			38	100
	BD-JS2539	-			50	100
	BD-JS2209	-			63	100
	BD-JS2569	-			69	100
	BD-JS2449	-			76	100
	BD-JS2579	-			88	100
	BD-JS2589	-			101	100
	BD-JS2599	-			114	100
	BD-JS2019	BD-JS4019	3/8	0.64	20	100
	BD-JS2439	-			25	100
	BD-JS2029	BD-JS4029			34	100
	BD-JS2459	BD-JS4459			50	100
	BD-JS2219	BD-JS4219			63	100
	BD-JS2469	-			76	100
	BD-JS2559	BD-JS4559			88	100
	BD-JS2489	BD-JS4489			101	100
	BD-JS2039	BD-JS4039	1/2	0.76	25	100
	BD-JS2049	BD-JS4049			31	100
	BD-JS2319	-			38	100
	BD-JS2369	-			44	100
	BD-JS2379	BD-JS4379			50	100
	BD-JS2339	BD-JS4339			63	100
	BD-JS2309	-			69	100
	BD-JS2349	BD-JS4349			76	100
	BD-JS2479	BD-JS4479			88	100
	BD-JS2499	BD-JS4499			101	100
	BD-JS2059	BD-JS4059	5/8		38	100
	BD-JS2069	BD-JS4069			44	100
	BD-JS2079	BD-JS4079			50	100
	BD-JS2089	BD-JS4089			57	100
	BD-JS2099	BD-JS4099			63	100
	BD-JS2279	BD-JS4279			50	100
	BD-JS2109	BD-JS4109	3/4		69	50
	BD-JS2119	BD-JS4119			76	50
	BD-JS2129	BD-JS4129			88	50
	BD-JS2139	BD-JS4139			101	25
	BD-JS2149	BD-JS4149			114	25
	BD-JS2159	BD-JS4159			127	25
	BD-JS2709	BD-JS4709			133	25
	BD-JS2169	BD-JS4169			152	25
	BD-JS2179	-			165	25
	BD-JS2189	-			177	25
	BD-JS2199	-			203	25

## INDUSTRIAL FITTINGS - clips, clamps, ferrules

### Band-It® banding assembly system

#### Tools for Standard and Junior band assembly

picture	code	band width [inch]	application
	BD-C07599	3/16 ÷ 3/4	Band-It® Standard 1/4"
	BD-C00189	3/16 ÷ 3/4	Band-It® Standard 3/8" ÷ 3/4" Band-It® Junior - for use with BD-J00199 adapter only
	BD-J00199	1/4 ÷ 3/4	Band-It® Junior - adapter for use with BD-C00189 tool only
	BD-C00399	3/16 ÷ 3/4	Band-It® Standard 3/8" ÷ 3/4" used when higher tension is required (heavy duty)
	BD-G40299	3/4 ÷ 1.1/4	Band-It® Standard Giant


# INDUSTRIAL FITTINGS - clips, clamps, ferrules


## Band-It® banding assembly system



### Band-It® Ultra-Lok®

The most robust of all banding systems intended for the most requiring applications. The banding is available as preformed, double wrap clamps with built-in buckles or as band in pieces that allow making a clamp directly on the hose (in a single or double wrap). A double wrap is recommended for superior strength. The smooth band properly mounted on a smooth, uncorrugated hose ensures tight connection of a fitting which reduces leaks paths into a clamp itself. Assembly with BD-UL9010 or BD-UL4000B electric tools.

picture	code (AISI 201)	band width * [inch]	band thickness [mm]	maximum diameter wrap [mm]	package [pcs]
<div>Band (a double wrap clamp with a built-in buckle)</div> 	BD-UL2799	1/2	0.76	38	100
	BD-UL2839			50	100
	BD-UL2869			69	100
	BD-UL2919			101	100
	BD-UL2279	3/4		50	100
	BD-UL2109			69	50
	BD-UL2119			76	50
	BD-UL2129			88	50
	BD-UL2139			101	25
	BD-UL2149			114	25
	BD-UL2159			127	25
	BD-UL2709			139	25
	BD-UL2169			152	25
	BD-UL2179			165	25
	BD-UL2189			177	25
	BD-UL2199			203	25
	BD-UL2289			228	10

picture	code (AISI 201)	band width * [inch]	band length [mm]	maximum diameter wrap [mm]		package [pcs]
				single	double	
Straight bands  	BD-UL1018	1/2	457	76	-	50
	BD-UL1024		610	127	64	50
	BD-UL1028		711	152	76	50
	BD-UL1032		813	178	89	50
	BD-UL1036		914	203	102	50
	BD-UL1046		1168	279	140	25
	BD-UL1056		1422	356	178	25
	BD-UL1070		1778	457	229	25
	BD-UL1086		2184	559	280	25
	BD-UL1096		2438	635	318	25
	BD-UL1106		2692	711	356	25
	BD-UL1116		2946	787	394	25


\* - Use BD- M09387 shear plate to adjust the tool before forming 1/2" clamp.




# INDUSTRIAL FITTINGS - clips, clamps, ferrules

## Band-It® banding assembly system

### Band-It® Ultra-Lok® - table follow up

picture	code (AISI 201)	band width * [inch]	band length [mm]	maximum diameter wrap [mm]		package [pcs]
				single	double	
	BD-UL2020	3/4	508	102	-	30
	BD-UL2024		610	140	-	25
	BD-UL2028		711	152	-	21
	BD-UL2032		813	178	89	19
	BD-UL2036		914	252	102	33
	BD-UL2040		1016	254	127	30
	BD-UL2044		1118	267	140	27
	BD-UL2048		1219	305	153	25
	BD-UL2052		1321	330	165	23
	BD-UL2060		1524	381	191	20
	BD-UL2068		1727	445	216	17
	BD-UL2076		1930	508	254	15
	BD-UL2084		2134	559	280	14
	BD-UL2092		2337	622	305	13
	BD-UL2120		3048	826	407	10
	BD-UL2150		3810	1029	508	8
	BD-UL2175		4445	1232	610	7

picture	code	size [inch]	package [pcs]
	BD-UB2549	1/2	100
	BD-UB2569	3/4	100

### Electric tools for Ultra-Lok® band assembly

 <p>BD-UL9010 (220 V)</p>	 <p>BD-UL4000B (battery)</p>
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# INDUSTRIAL FITTINGS - clips, clamps, ferrules

## Band-It® banding assembly system



### Band-It® Ball-Lok®

Self-locking bands can be assembled manually in a fast and easy way or with the use of tools listed further. Made entirely of AISI 304, AISI 316 steel or as an epoxy coated version (fully or partially coated). The epoxy coating is non-toxic, halogen-free but in the first place, it greatly improves corrosion resistance. The bands are highly resistant to fire, corrosion, UV radiation as well as high and low temperature.

picture	code (AISI 304)	code (AISI 316)	band width [mm]	band length [mm]	maximum diameter wrap [mm]	package [pcs]
	uncoated					
	BD-KE1118	BD-KE0118	4.6	150	30	100
	BD-KE1128	BD-KE0128		201	50	100
	BD-KE1138	BD-KE0138		259	69	100
	BD-KE1148	BD-KE0148		360	102	100
	BD-KE1158	BD-KE0158		520	152	100
	BD-KE1168	BD-KE0168		679	203	100
	BD-KE1178	BD-KE0178		838	254	100
	BD-KE1188	BD-KE0188		1067	305	100
	BD-KE1328	BD-KE0328	7.9	201	50	100
	BD-KE1338	BD-KE0338		259	69	100
	BD-KE1348	BD-KE0348		360	102	100
	BD-KE1358	BD-KE0358		520	152	100
	BD-KE1368	BD-KE0368		679	203	100
	BD-KE1378	BD-KE0378		838	254	100
	BD-KE1388	BD-KE0388		1067	305	100
	BD-KE1398	-		1200	360	100
	partial (AISI 316)	full (AISI 316)	epoxy coating			
	BD-KE0618	BD-KE0218	4.6	150	30	100
	BD-KE0628	BD-KE0228		201	50	100
	BD-KE0638	BD-KE0238		259	69	100
	BD-KE0648	BD-KE0248		360	102	100
	BD-KE0658	BD-KE0258		520	152	100
	BD-KE0668	BD-KE0268		679	203	100
	BD-KE0678	BD-KE0278		838	254	100
	BD-KE0818	BD-KE0418	7.9	150	30	100
	BD-KE0828	BD-KE0428		201	50	100
	BD-KE0838	BD-KE0438		259	69	100
	BD-KE0848	BD-KE0448		360	102	100
	BD-KE0858	BD-KE0458		520	152	100
	BD-KE0868	BD-KE0468		679	203	100
	BD-KE0878	BD-KE0478		838	254	100

### Tools for Ball-Lok® band assembly

Tool for band tightening and cutting



BD-K50289

Tool for band tightening and cutting



BD-KE9229


## INDUSTRIAL FITTINGS - clips, clamps, ferrules

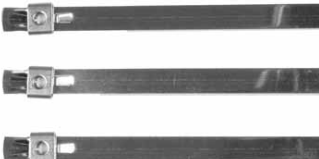
### Band-It® banding assembly system




#### Band-It® Tie-Lok®

Band-It® marking system utilizes tags for self-marking and for assembly with Tie-Lok® bands. Tie-Lok® is a durable, safe and reliable band with smooth internal layer that features low-profile lock. Marking tools are also available. For details of our offer, contact Sales or Technical Department of TUBES INTERNATIONAL®.

Identification tag	code (AISI 304)	code (AISI 316)	dimensions [mm]	package [pcs]
	BD-ID1009	BD-ID4409	51 x 19	100
	BD-ID1019	BD-ID4419	63.5 x 38	100
	BD-ID1029	BD-ID4429	89 x 19	100

Tag band	code (AISI 304)	code (AISI 316)	band width [inch]	length [mm]	maximum diameter wrap [mm]
	BD-AS2119	BD-AS4119	1/4	254	51
	BD-AS2129	BD-AS4129		419	101
	BD-AS2139	BD-AS4139		572	152
	BD-AS2149	BD-AS4149		737	203
	BD-AS2159	BD-AS4159		889	254

Tensioning and cutting tool for tag band application	code	band width [inch]	weight [kg]	max. tensile strength [kG]
	BD-A92079	1/4	0.45	130

### Tag marking tools



## INDUSTRIAL FITTINGS - clips, clamps, ferrules



### CAW

Clamps designed to assemble lightweight PVC and rubber hoses. The smooth internal layer of the band protects the hose against damage. Assembly and disassembly is fast and easy when tools intended for the purpose are used. As made of AISI 304 (W4) stainless steel, it can be used in food, medical, electronic and automotive industry (air conditioning).

code	I.D. [mm]	min. / max. diameter range [mm]	band thickness [mm]	band width [mm]
CL-CAW-070	7.0	5.7 ÷ 7.0	0.5	5
CL-CAW-080	8.0	6.8 ÷ 8.0		
CL-CAW-087	8.7	7.0 ÷ 8.7		
CL-CAW-090	9.0	7.3 ÷ 9.0		
CL-CAW-095	9.5	7.8 ÷ 9.5		
CL-CAW-100	10.0	8.3 ÷ 10.0		
CL-CAW-105	10.5	8.8 ÷ 10.5		
CL-CAW-109	10.9	9.2 ÷ 10.9		
CL-CAW-113	11.3	9.6 ÷ 11.3		
CL-CAW-118	11.8	10.1 ÷ 11.8		
CL-CAW-119	11.9	9.4 ÷ 11.9	0.6	7
CL-CAW-123	12.3	9.8 ÷ 12.3		
CL-CAW-128	12.8	10.3 ÷ 12.8		
CL-CAW-133	13.3	10.8 ÷ 13.3		
CL-CAW-138	13.8	11.3 ÷ 13.8		
CL-CAW-140	14.0	11.5 ÷ 14.0		
CL-CAW-142	14.2	11.7 ÷ 14.2		
CL-CAW-145	14.5	12.0 ÷ 14.5		
CL-CAW-148	14.8	12.3 ÷ 14.8		
CL-CAW-153	15.3	12.8 ÷ 15.3		
CL-CAW-157	15.7	13.2 ÷ 15.7		
CL-CAW-160	16.0	13.5 ÷ 16.0		
CL-CAW-162	16.2	13.7 ÷ 16.2		
CL-CAW-166	16.6	14.1 ÷ 16.6		
CL-CAW-168	16.8	14.3 ÷ 16.8		
CL-CAW-170	17.0	14.5 ÷ 17.0		
CL-CAW-175	17.5	15.0 ÷ 17.5		
CL-CAW-178	17.8	14.6 ÷ 17.8		
CL-CAW-180	18.0	14.8 ÷ 18.0		
CL-CAW-185	18.5	15.3 ÷ 18.5		

### Tools for CAW clamps assembly

clamping pliers



CL-CLTEN1099

compact pneumatic pliers



CL-UTSV001

## INDUSTRIAL FITTINGS - clips, clamps, ferrules



### DCL

DCL clamps are made of a one-piece band with a locking pawl which prevents accidental unlocking. Clamping force is evenly distributed on the pawl. The smooth internal layer of the band protects the hose against damage. Assembly and disassembly is fast and easy when tools intended for the purpose are used. As made of AISI 304 (W4) stainless steel, it can be used in food, home appliance and automotive industry. Colour-coded stripes on the clamps facilitate identification.

code	I.D. [mm]	min. / max. diameter range [mm]	band thickness [mm]	band width [mm]	color
CL-DCL-080	8.0	8.5 ÷ 9.5	0.5	6	blue
CL-DCL-085	8.5	9.0 ÷ 10.0			green
CL-DCL-090	9.0	9.5 ÷ 11.0			violet
CL-DCL-095	9.5	10.0 ÷ 11.5			black
CL-DCL-100	10.0	10.5 ÷ 11.5			green
CL-DCL-105	10.5	11.0 ÷ 12.0			blue
CL-DCL-110	11.0	11.5 ÷ 12.5			green
CL-DCL-115	11.5	12.0 ÷ 13.0			violet
CL-DCL-120	12.0	12.5 ÷ 13.5			black
CL-DCL-125	12.5	13.0 ÷ 14.0			red
CL-DCL-130	13.0	13.5 ÷ 14.5	0.6	8	green
CL-DCL-135	13.5	14.0 ÷ 15.0			violet
CL-DCL-140	14.0	14.5 ÷ 15.5			red
CL-DCL-145	14.5	15.0 ÷ 16.0			violet
CL-DCL-150	15.0	15.5 ÷ 16.5			black
CL-DCL-155	15.5	16.0 ÷ 17.0			blue
CL-DCL-160	16.5	16.5 ÷ 17.5			green
CL-DCL-165	17.0	17.0 ÷ 18.0			black
CL-DCL-170	17.5	17.5 ÷ 18.5			red
CL-DCL-175	18.0	18.0 ÷ 19.0			blue
CL-DCL-180	18.5	18.5 ÷ 19.5			green
CL-DCL-185	19.0	19.0 ÷ 20.0			violet
CL-DCL-190	19.5	19.5 ÷ 21.0			blue
CL-DCL-195	20.0	20.0 ÷ 21.5			black
CL-DCL-200	20.5	20.5 ÷ 22.0			red
CL-DCL-205	21.0	21.0 ÷ 22.5			blue
CL-DCL-210	21.5	21.5 ÷ 23.0			green
CL-DCL-215	22.0	22.0 ÷ 23.5			violet
CL-DCL-220	22.5	22.5 ÷ 24.0			black
CL-DCL-225	23.0	23.0 ÷ 24.5			red
CL-DCL-230	23.5	23.5 ÷ 25.0			blue
CL-DCL-235	24.0	24.0 ÷ 25.5			green

### Tools for DCL clamps assembly

clamping pliers



CL-CLICUT5201

compact pneumatic pliers



CL-UTSV001

## INDUSTRIAL FITTINGS - clips, clamps, ferrules



### EAR CLIP

EAR CLIP hose clips are simple to use and inexpensive. They are easy and fast to mount with special ear clamp pliers that are also used to disassemble the clips.

#### EAR CLIP with 1 ear

W1 code (galvanized steel)	W4 code (AISI 304)	I.D. [mm]	diameter range [mm]	band thickness [mm]	band width [mm]
AB-03012080	AB-23012440	9.3	7 ÷ 9	0.8	6
AB-03012072	AB-23012087	10.3	8 ÷ 10	0.8	6
AB-03012013	AB-23012010	11.3	9 ÷ 11	0.8	6.5
AB-03012021	AB-23012028	12.3	10 ÷ 12	0.8	6.5
AB-03012030	AB-23012036	13.3	11 ÷ 13	0.9 (W4 - 0.8)	6.5
AB-03012048	AB-23012044	14.3	12 ÷ 14	1	7
-	AB-23012079	15.3	13 ÷ 15	1	7
AB-03012056	AB-23012052	16.3	14 ÷ 16	1.1 (W4 - 1)	7
AB-03012064	AB-23012060	18.5	16 ÷ 18	1.2 (W4 - 1)	7
-	AB-23012423	19.5	17 ÷ 19	1	7.5
-	AB-23012431	20.5	18 ÷ 20	1	7.5

#### EAR CLIP with 2 ears

W1 code (galvanized steel)	W4 code (AISI 304)	I.D. [mm]	diameter range [mm]	band thickness [mm]	band width [mm]
AB-03012101	AB-23012108	7.3	5 ÷ 7	0.6	6
AB-03012110	AB-23012116	9.3	7 ÷ 9	0.8	6
AB-03012128	AB-23012124	11.3	9 ÷ 11	0.8	6.5
AB-03012099	-	12.3	10 ÷ 12	0.9	6.5
AB-03012136	AB-23012132	13.3	11 ÷ 13	0.9 (W4 - 0.8)	6.5
AB-03012144	AB-23012140	15.3	13 ÷ 15	1.0	7
AB-03012152	AB-23012159	17.5	14 ÷ 17	1.2 (W4 - 1)	7
AB-03012160	AB-23012167	18.5	15 ÷ 18	1.2 (W4 - 1)	7.5
AB-03012179	AB-23012175	20.5	17 ÷ 20	1.2 (W4 - 1)	7.5
AB-03012187	AB-23012183	21.5	18 ÷ 21	1.2 (W4 - 1)	8
AB-03012195	AB-23012191	23.5	20 ÷ 23	1.3 (W4 - 1)	8
AB-03012208	AB-23012204	25.5	22 ÷ 25	1.4 (W4 - 1.2)	8.5
AB-03012216	-	27.5	23 ÷ 27	1.4	8.5
AB-03012224	-	28.5	25 ÷ 28	1.4	9
AB-03012232	-	31.5	28 ÷ 31	1.4	9
AB-03012240	-	34.5	31 ÷ 34	1.4	9.5
AB-03012259	-	37.5	34 ÷ 37	1.6	9.5
AB-03012267	-	40.5	37 ÷ 40	1.6	10
AB-03012275	-	43.5	40 ÷ 43	1.6	10
AB-03012283	-	46.5	43 ÷ 46	1.6	10.5



EAR CLIP standard pliers

AB-61001

Flexible hose clamp driver for band clamps



AB-717005

## INDUSTRIAL FITTINGS - clips, clamps, ferrules



### EAR CLIP - W

EAR CLIP hose clips are simple to use and inexpensive. They are easy and fast to mount with special ear clamp pliers that are also used to disassemble the clips. The inner liner protects the hose against any damage.

#### EAR CLIP with 1 ear (with inner liner)

W1 code (galvanized steel)	W4 code (AISI 304)	I.D. [mm]	diameter range [mm]	band thickness [mm]	band width [mm]
AB-03011009	AB-23012300	8.5	7.5 ÷ 8.5	0.8	6
AB-03011010	AB-23012319	9.5	8 ÷ 9.5	0.8	6
AB-03011029	AB-23012327	10.5	9 ÷ 10.5	0.8	6.5
AB-03011037	AB-23012335	11.5	10 ÷ 11.5	0.8	6.5
AB-03011045	AB-23012343	12.5	10.5 ÷ 12.5	0.9 (W4 - 0.8)	6.5
AB-03011053	AB-23012351	13.3	11.5 ÷ 13.3	1	7
-	AB-23012360	14.5	12.5 ÷ 14.5	1	7
AB-03011061	AB-23012378	15.3	13 ÷ 15.3	1.1 (W4 - 1)	7
-	AB-23012386	16.3	14 ÷ 16.3	1	7
AB-03011070	AB-23012394	17.3	15 ÷ 17.3	1.2 (W4 - 1)	7
-	AB-23012407	18.3	16 ÷ 18.3	1	7.5
-	AB-23012415	19.3	17 ÷ 19.3	1	7.5



### WIRE CLIP

A wire spring clip is designed for quick mounting of low-pressure hoses. Made of zinc-plated spring steel.

code	min. diameter [mm]	max. diameter [mm]	wire [mm]
AB-02016012	7.3	7.8	1
AB-02016020	7.8	8.3	1
AB-02016039	8.3	8.8	1
AB-02016047	8.8	9.3	1
AB-02016055	9.3	9.9	1
AB-02016063	9.8	10.4	1.2
AB-02016071	10.4	11	1.2
AB-02016080	11	11.6	1.2
AB-02016098	11.6	12.3	1.5
AB-02016100	12.1	13.1	1.5
AB-02016119	12.9	13.6	1.5
AB-02016127	13.6	14.4	1.5
AB-02016135	14.4	15.1	1.8
AB-02016143	14.8	15.9	1.8
AB-02016151	15.9	16.8	1.8
AB-02016160	16.8	17.7	1.8
AB-02016178	17.7	18.7	2
AB-02016186	18.7	19.6	2
AB-02016194	19.6	20.6	2

## INDUSTRIAL FITTINGS - clips, clamps, ferrules



### MINI CLIP

Rolled-up edges of a MINI hose clip prevent damage of the hose. A hexagonal, slotted screw head allows screwing with the use of a flexible hose clamp driver.

MINI CLIP W1 - electro zinc-plated carbon steel.

MINI CLIP W4 - made entirely of AISI 304 steel.

W1 code (carbon steel)	min. diameter [mm]	max. diameter [mm]	tightening torque* [Nm]	max. medium pressure* [bar]
AB-03010510	6		0.4	15
AB-03010528	8		0.4	14
AB-03010536	9		1	15
AB-03010544	9.5	10	1	14
AB-03010552	10	11	1	13
AB-03010560	12	13	1	12.5
AB-03010579	13	14	1	12.5
AB-03010587	14	15	1	12
AB-03010595	15	17	1	12
AB-03010608	16	18	1	11.5
AB-03010616	18	20	1	10.5
AB-03010624	19	21	1	10.5
AB-03010632	20	22	1	10.5
AB-03010640	22	25	1	9.5
AB-03010659	23	26	1	9
AB-03010667	25	28	1	8.5
AB-03010675	26	29	1	8.5
AB-03010683	29	32	1	8

W4 code (AISI 304)	size	min. diameter [mm]	max. diameter [mm]	tightening torque* [Nm]
AB-622008	8	7.5	8.5	1.5
AB-622009	9	8.5	9.5	1.5
AB-622010	10	9.5	11	1.5
AB-622011	11	10.5	12	1.5
AB-622012	12	11.5	13	1.5
AB-622013	13	12.5	14	1.5
AB-622014	14	13.5	15	1.5
AB-622015	15	14.5	16	1.5
AB-622016	16	15	17	1.5
AB-622017	17	16	18	1.5

\* - depending on the type of a hose and connection part.



## INDUSTRIAL FITTINGS - clips, clamps, ferrules



### ASFA-L 9 mm

A general purpose, worm drive hose clamp designed for easy and quick mounting of low-pressure hoses. Manufactured according to the requirements of DIN 3017 standard. W5 version, made entirely of AISI 316 steel, is recommended for food, chemical and marine industry application, etc.

W1 code (galvanized steel)	W5 code (AISI 316)	min / max diameter range [mm]	band thickness [mm]	tightening torque* [Nm]	max. medium pressure* [bar]
AB-03008753	AB-03015759	8 ÷ 16	0.6	3	45
AB-03008761	AB-03015767	12 ÷ 22	0.6	3	45
AB-03008770	AB-03015775	16 ÷ 27	0.7	3.5	42
AB-03008788	AB-03015783	20 ÷ 32	0.7	3.5	36
AB-03008796	AB-03015804	25 ÷ 40	0.7	4	32
AB-03008809	AB-03015812	30 ÷ 45	0.7	4	28
AB-03008817	AB-03015820	32 ÷ 50	0.7	4	24
AB-03008825	AB-03015839	40 ÷ 60	0.7	4	19
AB-03008833	AB-03015847	50 ÷ 70	0.7	4	17
AB-03008841	AB-03015855	60 ÷ 80	0.7	4	15
AB-03008850	AB-03015863	70 ÷ 90	0.7	4	13
AB-03008868	AB-03015871	80 ÷ 100	0.7	4	11
AB-03008876	AB-03015880	90 ÷ 110	0.7	4	10
AB-03008884	AB-03015898	100 ÷ 120	0.7	4	9
AB-03008892	AB-03015900	110 ÷ 130	0.7	4	8
AB-03008905	AB-03015919	120 ÷ 140	0.7	4	7
AB-03008913	AB-03015927	130 ÷ 150	0.7	4	6
AB-03008921	AB-03015935	140 ÷ 160	0.7	4	5



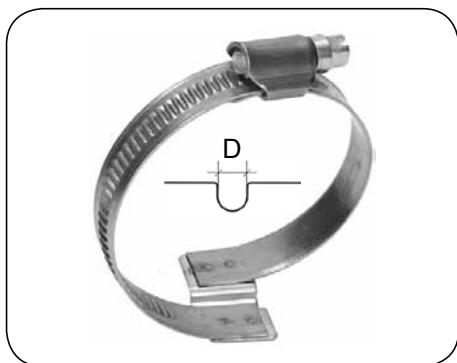
### ASFA-S 12 mm

A general purpose hose clamps designed for quick and easy clamping of low-pressure hoses. Manufactured in accordance with DIN 3017 standard. W5 version, made entirely of AISI 316 steel, is recommended for food, chemical, marine industry, etc.

W1 code (galvanized steel)	W5 code (AISI 316)	min / max diameter range [mm]	band thickness [mm]	tightening torque* [Nm]	max. medium pressure* [bar]
AB-03009001	AB-03017720	16 ÷ 27	0.8	4.2	45
AB-03009002	AB-03017500	20 ÷ 32	0.8	5.2	45
AB-03009003	AB-03017519	25 ÷ 40	0.8	5.2	40
AB-03009004	AB-03017738	30 ÷ 45	0.8	5.2	35
AB-03009005	AB-03017527	32 ÷ 50	0.8	6	35
AB-03009006	AB-03017535	40 ÷ 60	0.8	6	30
AB-03009007	AB-03017543	50 ÷ 70	0.8	6.8	25
AB-03009008	AB-03017551	60 ÷ 80	0.8	6.8	20
AB-03009009	AB-03017560	70 ÷ 90	0.8	6.8	17
AB-03009010	AB-03017578	80 ÷ 100	0.8	6.8	14
AB-03009011	AB-03017586	90 ÷ 110	0.8	6.8	12
AB-03009012	AB-03017594	100 ÷ 120	0.8	6.8	10
AB-03009013	AB-03017607	110 ÷ 130	0.8	6.8	8
AB-03009014	AB-03017615	120 ÷ 140	0.8	6.8	7
AB-03009015	AB-03017623	130 ÷ 150	0.8	6.8	6
AB-03009016	AB-03017631	140 ÷ 160	0.8	6.8	5
AB-03009017	AB-03017640	150 ÷ 170	0.8	6.8	4
AB-03009018	AB-03017658	160 ÷ 180	0.8	6.8	3
AB-03009019	AB-03017666	170 ÷ 190	0.8	6.8	2
AB-03009020	AB-03017674	180 ÷ 200	0.8	6.8	2
AB-03009021	AB-03017682	190 ÷ 210	0.8	6.8	1.8
AB-03009022	AB-03017690	200 ÷ 220	0.8	6.8	1.8
AB-03009023	AB-03017703	210 ÷ 230	0.8	6.8	1.6
AB-03009024	AB-03017711	220 ÷ 240	0.8	6.8	1.6

\* - depending on hose type and connection shape.

## INDUSTRIAL FITTINGS - clips, clamps, ferrules



### BC bridge clamp

A bridge worm drive clamp with 9 and 12 mm band width. A clockwise clamp is designed to assemble P1, P2, P3, P7 type helix-reinforced ducting hoses whereas a counter-clockwise clamp for Clip type hoses (see: ducting and ventilation). The bridge of the clamp secures tight connection and prevents hose damage.

W2 - AISI 430 steel

W4 - AISI 304 steel

W5 - AISI 316 steel

W2 code	W4 code	W5 code	min / max diam. range [mm]	band width [mm]	bridge width D [mm]	pieces number
CL-OMP-040-097-W2	CL-OMP-040-097-W4	CL-OMP-040-097-W5	25 ÷ 40	9	7	1
CL-OMP-050-097-W2	CL-OMP-050-097-W4	CL-OMP-050-097-W5	32 ÷ 50			
CL-OMP-060-097-W2	CL-OMP-060-097-W4	CL-OMP-060-097-W5	40 ÷ 60			
CL-OMP-070-097-W2	CL-OMP-070-097-W4	CL-OMP-070-097-W5	50 ÷ 70			
CL-OMP-080-097-W2	CL-OMP-080-097-W4	CL-OMP-080-097-W5	60 ÷ 80			
CL-OMP-090-097-W2	CL-OMP-090-097-W4	CL-OMP-090-097-W5	70 ÷ 90			
CL-OMP-100-097-W2	CL-OMP-100-097-W4	CL-OMP-100-097-W5	80 ÷ 100			
CL-OMP-110-097-W2	CL-OMP-110-097-W4	CL-OMP-110-097-W5	90 ÷ 110			
CL-OMP-120-097-W2	CL-OMP-120-097-W4	CL-OMP-120-097-W5	100 ÷ 120			
CL-OMP-130-097-W2	CL-OMP-130-097-W4	CL-OMP-130-097-W5	110 ÷ 130			
CL-OMP-140-097-W2	CL-OMP-140-097-W4	CL-OMP-140-097-W5	120 ÷ 140			
CL-OMP-150-097-W2	CL-OMP-150-097-W4	CL-OMP-150-097-W5	130 ÷ 150			
CL-OMP-160-097-W2	CL-OMP-160-097-W4	CL-OMP-160-097-W5	140 ÷ 160			
CL-OMP-040-127-W2	CL-OMP-040-127-W4	CL-OMP-040-127-W5	25 ÷ 40	12	7	
CL-OMP-050-127-W2	CL-OMP-050-127-W4	CL-OMP-050-127-W5	32 ÷ 50			
CL-OMP-060-127-W2	CL-OMP-060-127-W4	CL-OMP-060-127-W5	40 ÷ 60			
CL-OMP-070-127-W2	CL-OMP-070-127-W4	CL-OMP-070-127-W5	50 ÷ 70			
CL-OMP-080-127-W2	CL-OMP-080-127-W4	CL-OMP-080-127-W5	60 ÷ 80			
CL-OMP-090-127-W2	CL-OMP-090-127-W4	CL-OMP-090-127-W5	70 ÷ 90			
CL-OMP-100-127-W2	CL-OMP-100-127-W4	CL-OMP-100-127-W5	80 ÷ 100			
CL-OMP-110-127-W2	CL-OMP-110-127-W4	CL-OMP-110-127-W5	90 ÷ 110			
CL-OMP-120-127-W2	CL-OMP-120-127-W4	CL-OMP-120-127-W5	100 ÷ 120			
CL-OMP-130-127-W2	CL-OMP-130-127-W4	CL-OMP-130-127-W5	110 ÷ 130			
CL-OMP-140-127-W2	CL-OMP-140-127-W4	CL-OMP-140-127-W5	120 ÷ 140			
CL-OMP-150-127-W2	CL-OMP-150-127-W4	CL-OMP-150-127-W5	130 ÷ 150			
CL-OMP-160-127-W2	CL-OMP-160-127-W4	CL-OMP-160-127-W5	140 ÷ 160			
CL-OMP-170-127-W2	CL-OMP-170-127-W4	CL-OMP-170-127-W5	150 ÷ 170			
CL-OMP-180-127-W2	CL-OMP-180-127-W4	CL-OMP-180-127-W5	160 ÷ 180			
CL-OMP-190-127-W2	CL-OMP-190-127-W4	CL-OMP-190-127-W5	170 ÷ 190			
CL-OMP-200-127-W2	CL-OMP-200-127-W4	CL-OMP-200-127-W5	180 ÷ 200			



Two-piece clamp

# INDUSTRIAL FITTINGS - clips, clamps, ferrules

## BC bridge clamp - table follow up

W2 code	W4 code	code W5	min / max diam. range [mm]	band width [mm]	bridge width D [mm]	pieces number
CL-OMP-215-126-W2	CL-OMP-215-126-W4	CL-OMP-215-126-W5	195 ÷ 215	12	6	1
CL-OMP-225-126-W2	CL-OMP-225-126-W4	CL-OMP-225-126-W5	205 ÷ 225			
CL-OMP-235-126-W2	CL-OMP-235-126-W4	CL-OMP-235-126-W5	215 ÷ 235			
CL-OMP-245-126-W2	CL-OMP-245-126-W4	CL-OMP-245-126-W5	225 ÷ 245			
CL-OMP-255-126-W2	CL-OMP-255-126-W4	CL-OMP-255-126-W5	235 ÷ 255			
CL-OMP-265-126-W2	CL-OMP-265-126-W4	CL-OMP-265-126-W5	225 ÷ 265			2
CL-OMP-275-126-W2	CL-OMP-275-126-W4	CL-OMP-275-126-W5	235 ÷ 275			
CL-OMP-285-126-W2	CL-OMP-285-126-W4	CL-OMP-285-126-W5	245 ÷ 285			
CL-OMP-295-126-W2	CL-OMP-295-126-W4	CL-OMP-295-126-W5	255 ÷ 295			
CL-OMP-315-126-W2	CL-OMP-315-126-W4	CL-OMP-315-126-W5	275 ÷ 315			
CL-OMP-335-126-W2	CL-OMP-335-126-W4	CL-OMP-335-126-W5	295 ÷ 335			3
CL-OMP-365-126-W2	CL-OMP-365-126-W4	CL-OMP-365-126-W5	325 ÷ 365			
CL-OMP-415-126-W2	CL-OMP-415-126-W4	CL-OMP-415-126-W5	355 ÷ 415			
CL-OMP-435-126-W2	CL-OMP-435-126-W4	CL-OMP-435-126-W5	375 ÷ 435			
CL-OMP-465-126-W2	CL-OMP-465-126-W4	CL-OMP-465-126-W5	405 ÷ 465			
CL-OMP-515-126-W2	CL-OMP-515-126-W4	CL-OMP-515-126-W5	455 ÷ 515	12	8	4
CL-OMP-615-126-W2	CL-OMP-615-126-W4	CL-OMP-615-126-W5	535 ÷ 615			
CL-OMP-715-126-W2	CL-OMP-715-126-W4	CL-OMP-715-126-W5	635 ÷ 715			
CL-OMP-815-126-W2	CL-OMP-815-126-W4	CL-OMP-815-126-W5	735 ÷ 815			
CL-OMP-915-126-W2	CL-OMP-915-126-W4	CL-OMP-915-126-W5	835 ÷ 915			
CL-OMP-215-128-W2	CL-OMP-215-128-W4	CL-OMP-215-128-W5	195 ÷ 215			1
CL-OMP-225-128-W2	CL-OMP-225-128-W4	CL-OMP-225-128-W5	205 ÷ 225			
CL-OMP-235-128-W2	CL-OMP-235-128-W4	CL-OMP-235-128-W5	215 ÷ 235			
CL-OMP-245-128-W2	CL-OMP-245-128-W4	CL-OMP-245-128-W5	225 ÷ 245			
CL-OMP-255-128-W2	CL-OMP-255-128-W4	CL-OMP-255-128-W5	235 ÷ 255			2
CL-OMP-265-128-W2	CL-OMP-265-128-W4	CL-OMP-265-128-W5	225 ÷ 265			
CL-OMP-275-128-W2	CL-OMP-275-128-W4	CL-OMP-275-128-W5	235 ÷ 275			
CL-OMP-285-128-W2	CL-OMP-285-128-W4	CL-OMP-285-128-W5	245 ÷ 285			
CL-OMP-295-128-W2	CL-OMP-295-128-W4	CL-OMP-295-128-W5	255 ÷ 295			
CL-OMP-315-128-W2	CL-OMP-315-128-W4	CL-OMP-315-128-W5	275 ÷ 315			3
CL-OMP-335-128-W2	CL-OMP-335-128-W4	CL-OMP-335-128-W5	295 ÷ 335			
CL-OMP-365-128-W2	CL-OMP-365-128-W4	CL-OMP-365-128-W5	325 ÷ 365			
CL-OMP-415-128-W2	CL-OMP-415-128-W4	CL-OMP-415-128-W5	355 ÷ 415			
CL-OMP-435-128-W2	CL-OMP-435-128-W4	CL-OMP-435-128-W5	375 ÷ 435			
CL-OMP-465-128-W2	CL-OMP-465-128-W4	CL-OMP-465-128-W5	405 ÷ 465			4
CL-OMP-515-128-W2	CL-OMP-515-128-W4	CL-OMP-515-128-W5	455 ÷ 515			
CL-OMP-615-128-W2	CL-OMP-615-128-W4	CL-OMP-615-128-W5	535 ÷ 615			
CL-OMP-715-128-W2	CL-OMP-715-128-W4	CL-OMP-715-128-W5	635 ÷ 715			
CL-OMP-815-128-W2	CL-OMP-815-128-W4	CL-OMP-815-128-W5	735 ÷ 815			
CL-OMP-915-128-W2	CL-OMP-915-128-W4	CL-OMP-915-128-W5	835 ÷ 915			

The codes in the tables apply to the clockwise clamps.

A code example of a counter-clockwise clamp, 25 ÷ 40 mm, 9 mm wide, 7 mm bridge, W2: CL-OML-040-097-W2.  
The range of diameters, band and bridge width are the same as for clockwise version.

## INDUSTRIAL FITTINGS - clips, clamps, ferrules



### FLEX-GEAR

Band clamps with spring lock system maintaining constant clamping force. Excellent choice for fluctuating and extreme temperature applications. The rolled-up edges of the band protect the external layer of the hose from damage and ensure even clamping force around the hose. Tightening torque: 5.6 Nm (max. 9.6 Nm).

The band clamp of 847 series is made entirely of stainless steel, whereas the clamp of 843 series has a carbon steel screw coated with a layer of Zn + Cr (III). Band width 9/16".

code (847 series)	code (843 series)	minimum diameter [mm]	maximum diameter [mm]	SAE size
AB-847010	AB-843010	14	27	10
AB-847012	AB-843012	16	32	12
AB-847016	AB-843016	21	38	16
AB-847020	AB-843020	20	44	20
AB-847024	AB-843024	27	51	24
AB-847028	AB-843028	33	57	28
AB-847032	AB-843032	40	63	32
AB-847036	AB-843036	46	70	36
AB-847040	AB-843040	52	76	40
AB-847044	AB-843044	59	82	44
AB-847048	AB-843048	65	89	48



### FLEX-GEAR HD

Band clamps with spring lock system maintaining constant clamping force. Excellent choice for fluctuating and extreme temperature applications. The rolled-up edges of the band protect the external layer of the hose from damage and ensure even clamping force around the hose. Tightening torque: 8.5 Nm (max. 14.1 Nm).

The band clamp of 845 series is made entirely of stainless steel, whereas the clamp of 841 series has a carbon steel screw coated with a layer of Zn + Cr (III). Band width 5/8".

code (845 series)	code (841 series)	minimum diameter [mm]	maximum diameter [mm]	SAE size
AB-845175	AB-841175	25	45	175
AB-845200	AB-841200	32	54	212
AB-845250	AB-841250	45	67	262
AB-845300	AB-841300	57	79	312
AB-845350	AB-841350	70	92	362
AB-845400	AB-841400	83	105	412
AB-845450	AB-841450	95	117	462
AB-845500	AB-841500	108	130	512
AB-845550	AB-841550	121	143	562
AB-845600	AB-841600	133	155	612
AB-845650	AB-841650	146	168	662
AB-845700	AB-841700	159	181	712
AB-845750	AB-841750	172	193	762
AB-845800	AB-841800	184	206	812
AB-845850	AB-841850	197	219	862
AB-845900	AB-841900	210	232	912

# INDUSTRIAL FITTINGS - clips, clamps, ferrules



## SUPRA HEAVY DUTY W2. W4

A robust clamp with rolled-up band edges recommended for reinforced, thick-wall industrial hoses. The hexagonal head design of a screw allows tightening with such common tools as flat, tubular or adjustable spanner.

W2 - band and bridge AISI 430 steel, bolt and rollers of zinc-plated steel.

W4 - band and bridge AISI 304 steel, bolt and rollers AISI 302 steel.

W2 code	W4 code	min / max diameter range [mm]	band width [mm]	bolt size	max. tightening torque* [Nm]	max. medium pressure* [bar]
AB-03019012	AB-03013016	17 ÷ 19	18	M6	10	45
AB-03019020	AB-03013024	19 ÷ 21				
AB-03019039	AB-03013032	21 ÷ 23				
AB-03019047	AB-03013040	23 ÷ 25				
AB-03019055	AB-03013059	25 ÷ 27				
AB-03019063	AB-03013067	27 ÷ 29				
AB-03019071	AB-03013075	29 ÷ 31	20	M7	12	40
AB-03019080	AB-03013083	31 ÷ 34				
AB-03019098	AB-03013091	34 ÷ 37				
AB-03019100	AB-03013104	37 ÷ 40				
AB-03019119	AB-03013112	40 ÷ 43				
AB-03019127	AB-03013120	43 ÷ 47				
AB-03019135	AB-03013139	47 ÷ 51			16	36
AB-03019143	AB-03013147	51 ÷ 55				
AB-03019151	AB-03013155	55 ÷ 59				
AB-03019160	AB-03013163	59 ÷ 63				
AB-03019178	AB-03013171	63 ÷ 68				
AB-03019186	AB-03013180	68 ÷ 73	25	M8	30	28
AB-03019194	AB-03013198	73 ÷ 79				20
AB-03019207	AB-03013200	79 ÷ 85				12
AB-03019215	AB-03013219	85 ÷ 91				12
AB-03019223	AB-03013227	91 ÷ 97				12
AB-03019231	AB-03013235	97 ÷ 104				12
AB-03019240	AB-03013243	104 ÷ 112				12
AB-03019258	AB-03013251	112 ÷ 121				12
AB-03019266	AB-03013260	121 ÷ 130				12
AB-03019274	AB-03013278	130 ÷ 140				12
AB-03019282	AB-03013286	140 ÷ 150	28	M10	45	9
AB-03019290	AB-03013294	150 ÷ 162				6
AB-03019303	AB-03013307	162 ÷ 174				3
AB-03019311	AB-03013315	174 ÷ 187				3
AB-03019320	AB-03013323	187 ÷ 200				3
AB-03019338	AB-03013331	200 ÷ 213				3
AB-03019346	AB-03013340	213 ÷ 226				3
AB-03019354	AB-03013358	226 ÷ 239				3
AB-03019362	AB-03013366	239 ÷ 252				3
AB-03019370	AB-03013374	252 ÷ 265				3
AB-03019477	AB-03013390	265 ÷ 278				3
AB-03019392	AB-03013422	278 ÷ 291				3
AB-03019403	AB-03013433	291 ÷ 304				3
AB-03019411	AB-03013444	304 ÷ 317				3
AB-03019485	AB-03013403	317 ÷ 330				3
AB-03019422	AB-03013455	330 ÷ 343				3
AB-03019433	AB-03013466	343 ÷ 356				3
AB-03019444	AB-03013477	356 ÷ 369				3
AB-03019455	AB-03013488	369 ÷ 382				3
AB-03019499	AB-03013499	382 ÷ 395				3
AB-03019500	AB-03013500	395 ÷ 408				3

\* - depending on hose type and connection shape

## INDUSTRIAL FITTINGS - clips, clamps, ferrules



### HDC W1, W5

A robust clamp with rolled-up band edges recommended for reinforced, thick-wall industrial hoses. The hexagonal head of a bolt allows tightening with such common tools as flat, tubular and adjustable spanner.

W1 - all parts made of zinc-plated steel.

W5 - all parts made of AISI 316 steel.

W1 code	W5 code	min / max diameter range [mm]	thickness x band width		bolt [mm]
			W1 [mm]	W5 [mm]	
AB-HDC-017-019-W1	AB-HDC-017-019-W5	17 ÷ 19	0.6×18	0.6×18	M5×40
AB-HDC-020-022-W1	AB-HDC-020-022-W5	20 ÷ 22			
AB-HDC-023-025-W1	AB-HDC-023-025-W5	23 ÷ 25			
AB-HDC-026-028-W1	AB-HDC-026-028-W5	26 ÷ 28			
AB-HDC-029-031-W1	AB-HDC-029-031-W5	29 ÷ 31	0.8×20	0.6×20	M6×50
AB-HDC-032-035-W1	AB-HDC-032-035-W5	32 ÷ 35			
AB-HDC-036-039-W1	AB-HDC-036-039-W5	36 ÷ 39			
AB-HDC-040-043-W1	AB-HDC-040-043-W5	40 ÷ 43			
AB-HDC-044-047-W1	AB-HDC-044-047-W5	44 ÷ 47	1.2×22	0.8×22	M6×55
AB-HDC-048-051-W1	AB-HDC-048-051-W5	48 ÷ 51			
AB-HDC-052-055-W1	AB-HDC-052-055-W5	52 ÷ 55			
AB-HDC-056-059-W1	AB-HDC-056-059-W5	56 ÷ 59			
AB-HDC-060-063-W1	AB-HDC-060-063-W5	60 ÷ 63	1.5×22	0.8×24	M8×70
AB-HDC-064-067-W1	AB-HDC-064-067-W5	64 ÷ 67			
AB-HDC-068-073-W1	AB-HDC-068-073-W5	68 ÷ 73			
AB-HDC-074-079-W1	AB-HDC-074-079-W5	74 ÷ 79			
AB-HDC-080-085-W1	AB-HDC-080-085-W5	80 ÷ 85	1.5×24	0.8×24	M8×80
AB-HDC-086-091-W1	AB-HDC-086-091-W5	86 ÷ 91			
AB-HDC-092-097-W1	AB-HDC-092-097-W5	92 ÷ 97			
AB-HDC-098-103-W1	AB-HDC-098-103-W5	98 ÷ 103			
AB-HDC-104-112-W1	AB-HDC-104-112-W5	104 ÷ 112	1.7×26	1×26	M10×90
AB-HDC-113-121-W1	AB-HDC-113-121-W5	113 ÷ 121			
AB-HDC-122-130-W1	AB-HDC-122-130-W5	122 ÷ 130			M10×110
AB-HDC-131-139-W1	AB-HDC-131-139-W5	131 ÷ 139			
AB-HDC-140-148-W1	AB-HDC-140-148-W5	140 ÷ 148			
AB-HDC-149-161-W1	AB-HDC-149-161-W5	149 ÷ 161			
AB-HDC-162-174-W1	AB-HDC-162-174-W5	162 ÷ 174			
AB-HDC-175-187-W1	AB-HDC-175-187-W5	175 ÷ 187			
AB-HDC-188-200-W1	AB-HDC-188-200-W5	188 ÷ 200			
AB-HDC-201-213-W1	AB-HDC-201-213-W5	201 ÷ 213			
AB-HDC-214-226-W1	AB-HDC-214-226-W5	214 ÷ 226			
AB-HDC-227-239-W1	AB-HDC-227-239-W5	227 ÷ 239			
AB-HDC-240-252-W1	AB-HDC-240-252-W5	240 ÷ 252			
AB-HDC-253-265-W1	AB-HDC-253-265-W5	253 ÷ 265			
AB-HDC-266-278-W1	AB-HDC-266-278-W5	266 ÷ 278			
AB-HDC-279-291-W1	AB-HDC-279-291-W5	279 ÷ 291			
AB-HDC-294-304-W1	AB-HDC-294-304-W5	294 ÷ 304			

## INDUSTRIAL FITTINGS - clips, clamps, ferrules



### DPC W1, W5

A clamp with robust, double band. Two bolt guarantee accurate and tight connection of a hose with its fitting.



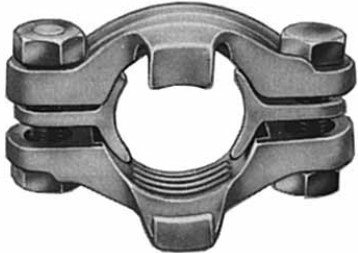

W1 - all parts made of zinc-plated steel.

W5 - all parts made of AISI 316 steel.

W1 code	W5 code	min - max diameter range [mm]	thickness x band width [mm]	bolt [mm]
AB-DPC-035-045-W1	AB-DPC-035-045-W5	35 ÷ 45	1x20	W1 - M6×45 W5 - M6×50
AB-DPC-040-050-W1	AB-DPC-040-050-W5	40 ÷ 50		
AB-DPC-045-055-W1	AB-DPC-045-055-W5	45 ÷ 55		
AB-DPC-050-060-W1	AB-DPC-050-060-W5	50 ÷ 60		
AB-DPC-055-065-W1	AB-DPC-055-065-W5	55 ÷ 65		
AB-DPC-060-070-W1	AB-DPC-060-070-W5	60 ÷ 70		
AB-DPC-065-075-W1	AB-DPC-065-075-W5	65 ÷ 75		
AB-DPC-070-080-W1	AB-DPC-070-080-W5	70 ÷ 80		
AB-DPC-075-085-W1	AB-DPC-075-085-W5	75 ÷ 85		
AB-DPC-080-090-W1	AB-DPC-080-090-W5	80 ÷ 90		
AB-DPC-085-095-W1	AB-DPC-085-095-W5	85 ÷ 95		
AB-DPC-090-100-W1	AB-DPC-090-100-W5	90 ÷ 100	1x24	M8×60
AB-DPC-095-105-W1	AB-DPC-095-105-W5	95 ÷ 105		
AB-DPC-100-110-W1	AB-DPC-100-110-W5	100 ÷ 110		
AB-DPC-105-115-W1	AB-DPC-105-115-W5	105 ÷ 115		
AB-DPC-110-120-W1	AB-DPC-110-120-W5	110 ÷ 120		
AB-DPC-115-125-W1	AB-DPC-115-125-W5	115 ÷ 125		
AB-DPC-120-130-W1	AB-DPC-120-130-W5	120 ÷ 130		
AB-DPC-125-135-W1	AB-DPC-125-135-W5	125 ÷ 135		
AB-DPC-130-140-W1	AB-DPC-130-140-W5	130 ÷ 140		
AB-DPC-135-145-W1	AB-DPC-135-145-W5	135 ÷ 145		
AB-DPC-140-150-W1	AB-DPC-140-150-W5	140 ÷ 150		
AB-DPC-145-155-W1	AB-DPC-145-155-W5	145 ÷ 155		
AB-DPC-150-160-W1	AB-DPC-150-160-W5	150 ÷ 160		
AB-DPC-155-165-W1	AB-DPC-155-165-W5	155 ÷ 165		
AB-DPC-160-170-W1	AB-DPC-160-170-W5	160 ÷ 170		
AB-DPC-165-175-W1	AB-DPC-165-175-W5	165 ÷ 175		
AB-DPC-170-180-W1	AB-DPC-170-180-W5	170 ÷ 180		
AB-DPC-190-200-W1	AB-DPC-190-200-W5	190 ÷ 200		
AB-DPC-200-210-W1	AB-DPC-200-210-W5	200 ÷ 210		
AB-DPC-210-220-W1	AB-DPC-210-220-W5	210 ÷ 220		
AB-DPC-220-230-W1	AB-DPC-220-230-W5	220 ÷ 230		
AB-DPC-230-240-W1	AB-DPC-230-240-W5	230 ÷ 240		
AB-DPC-240-250-W1	AB-DPC-240-250-W5	240 ÷ 250		
AB-DPC-250-260-W1	AB-DPC-250-260-W5	250 ÷ 260		
AB-DPC-260-270-W1	AB-DPC-260-270-W5	260 ÷ 270		
AB-DPC-270-280-W1	AB-DPC-270-280-W5	270 ÷ 280		
AB-DPC-290-300-W1	AB-DPC-290-300-W5	290 ÷ 300		

## INDUSTRIAL FITTINGS - clips, clamps, ferrules

### Malleable iron clamps

picture	code	hose I.D. [mm]	clamp I.D. [mm]	working pressure [bar]	description
	MU-1352	13	17 ÷ 22	16	Two-part hose clamp. Material: zinc-plated malleable iron.
	MU-1353	19	27 ÷ 32	16	
	MU-1302	13	20 ÷ 29	16	Two-part hose clamp according to DIN 20039 A. Material: zinc-plated malleable iron.
	MU-1303	19	28 ÷ 34	16	
	MU-1304	25	32 ÷ 40	16	
	MU-1305	32	39 ÷ 49	16	
	MU-1306	38	48 ÷ 60	16	
	MU-1307	50	60 ÷ 76	16	
	MU-1308	63	77 ÷ 94	16	
	MU-1309	75	94 ÷ 115	16	
	MU-1310	89	115 ÷ 145	16	Two-part hose clamp with safety claws and separate tongues according to DIN 20039 B. Material: zinc-plated malleable iron.
	MU-1322	13	22 ÷ 29	25	
	MU-1323	19	28 ÷ 33	25	
	MU-1324	25	35 ÷ 42	25	
	MU-1325	28	40 ÷ 47	25	
	MU-1326	35	48 ÷ 60	25	
	MU-1327	42	53 ÷ 68	25	
	MU-1328	50	58 ÷ 76	25	
	MU-1329	65	75 ÷ 88	25	
	MU-1330	75	90 ÷ 110	25	Three-part hose clamp with safety claws and separate tongues according to DIN 20039B. Material: zinc-plated malleable iron.
	MU-1331	105	110 ÷ 135	25	
	MU-1333	150	170 ÷ 190	25	



# INDUSTRIAL FITTINGS - clips, clamps, ferrules

## Safety clamps EN 14420-3 (DIN 2817), EN 14423 (DIN 2826)

**Material:** SS (AISI 316), Ms (brass), Al (aluminium)

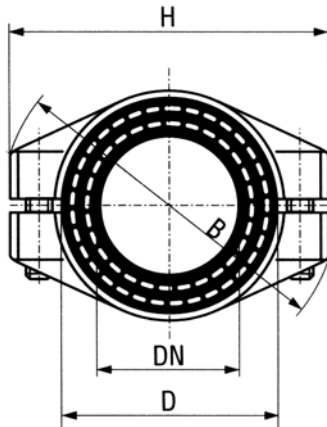
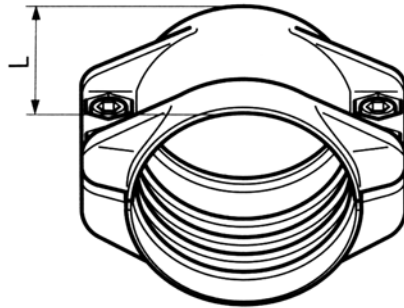
**Working press.:** 25 bar (EN 14420-3), up to 100 bar (EN 14423)

Safety clamp designed to assemble a hose on a fitting with a safety collar.

DN - hose inside diameter x hose wall thickness.

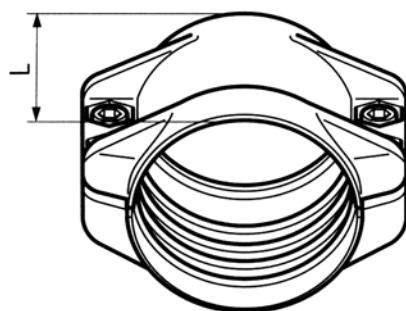
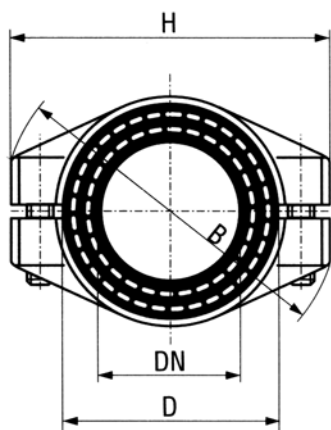
RS-636..., RS-637... (EN 14423) clamps designed for standard fittings (smooth).

RS-635... (EN 14420-3) clamps designed for high pressure and steam fittings (with serrated tail).

	code	DN [mm]	D min-max [mm]	material	dimensions [mm]			bolts	weight [kg]		
					H	B	L				
	RS-636013005020	13 x 5	22 ÷ 24	SS	56	59	50	4 x M6x20	0.25		
	RS-636013005030			Ms					0.27		
	RS-636013005040			Al					0.11		
	RS-635013005030	13 x 6	24 ÷ 26	Ms	54	57	65		0.37		
	RS-635013006020			SS					0.32		
	RS-635013006030			Ms					0.34		
	RS-635013007030	13 x 7	26 ÷ 28	Ms					0.31		
	RS-636019006020	19 x 6	30 ÷ 33	SS	65	68	50	4 x M6x20	0.31		
	RS-636019006030			Ms					0.31		
	RS-636019006040			Al					0.13		
	RS-635019006030	19 x 7	32 ÷ 34	Ms	67	70	65	4 x M8x25	0.54		
	RS-635019007020			SS					0.50		
	RS-635019007030			Ms					0.56		
	RS-636025006020	25 x 6	36 ÷ 39	SS	73	75	50	4 x M6x20	0.33		
	RS-636025006030			Ms					0.33		
	RS-636025006040			Al					0.14		
	RS-635025007030	25 x 6.5	37 ÷ 39	Ms	76	79	65	4 x M8x25	0.55		
	RS-635025008020	25 x 7.5	39 ÷ 41	SS	80	83			0.63		
	RS-635025008030			Ms					0.68		
	RS-636025008030	25 x 8	40 ÷ 43	Ms	76	79	50	4 x M6x20	0.38		
RS-636025008040	Al			0.14							
RS-635025009030	25 x 8.5	41 ÷ 43	Ms	80	83	65	4 xM8x25	0.65			
	RS-636032006020	32 x 6	43 ÷ 46	SS	75	77	50	4 x M6x20	0.35		
	RS-636032006030			Ms					0.41		
	RS-636032006040			Al					0.15		
	RS-635032006030	32 x 8	47 ÷ 50	Ms	86	89	77	4 x M8x25	0.87		
	RS-636032008030			Ms					0.41		
	RS-636032008040			Al					0.15		
	RS-635032008020	32 x 10	50 ÷ 53	SS	88	90	77	4 x M8x25	0.72		
	RS-635032008030			Ms					0.78		
	RS-636032010030	32 x 10	50 ÷ 53	Ms	84	86	50	4 x M6x20	0.49		
	RS-636032010040			Al					0.17		
RS-635032010030	Ms			95	97	77	4 x M8x25	0.83			
RS-636035006040	35 x 6	47 ÷ 50	Al	83	85	50	4 x M6x20	0.15			
	RS-636038007020	38 x 6.5	50 ÷ 52	SS	83	85	50	4 x M6x20	0.38		
	RS-636038007030			Ms					0.43		
	RS-636038007040			Al					0.16		
	RS-636038008030	38 x 8	53 ÷ 56	Ms	85	87	90	4 x M10x40	0.50		
	RS-636038008040			Al					0.18		
	RS-635038008020			SS					1.30		
	RS-635038008030	38 x 10	57 ÷ 60	Ms	102	107	90		1.40		
	RS-636038010030			Ms			4 x M6x20	0.50			
	RS-636038010040			Al				0.18			
	RS-635038010030	40 x 7	53 ÷ 56	Ms	90	92	50	4 x M10x40	1.55		
RS-636040007030	Ms			0.50							
RS-636040007040	Al			0.18							
RS-636040010030	40 x 10	58 ÷ 61	Ms	85	87	50	4 x M6x20	0.52			
RS-636040010040			Al					0.19			
RS-636045007040	45 x 7	58 ÷ 61	Al	98	101	57	4 x M8x25	0.30			

# INDUSTRIAL FITTINGS - clips, clamps, ferrules

## Safety clamps EN 14420-3 (DIN 2817), EN 14423 (DIN 2826)



code	DN [mm]	D min-max [mm]	material	dimensions [mm]			bolts	weight [kg]	
				H	B	L			
RS-636050008020	50 x 8	64 ÷ 67	SS	103	106	57	4 x M8x25	0.65	
RS-636050008030			MS					0.71	
RS-636050008040			Al					0.27	
RS-635050009020	50 x 9	67 ÷ 69	SS	113	117	100	4 x M10x40	1.65	
RS-635050009030			Ms					1.70	
RS-636050010030	50 x 10	69 ÷ 71	Ms	107	110	57	4 x M8x25	0.81	
RS-636050010040			Al					0.31	
RS-635050010030			50 x 12	73 ÷ 76	Ms	116	121	100	4 x M10x40
RS-635050012030	Ms	128			132	2.40			
RS-636065007020	65 x 7	78 ÷ 82			SS	118	121		
RS-636065007030			Ms	1.20					
RS-636065007040			Al	0.40					
RS-636065010030	65 x 10	84 ÷ 87	Ms	124	126	102	4 x M10x40	1.30	
RS-636065010040			Al					0.45	
RS-635065010030			65 x 12	88 ÷ 91	Ms			141	143
RS-636075008020	SS	131			133	77	4 x M8x25	1.15	
RS-636075008030	Ms							1.25	
RS-636075008040	Al		0.49						
RS-636075010030	75 x 10	94 ÷ 97	Ms	138	140	115	4 x M10x40	1.40	
RS-636075010040			Al					0.53	
RS-635075010030			75 x 12	98 ÷ 101	Ms			148	150
RS-636075012040	Al	141			142	0.52			
RS-635075012030	Ms	148			150	115	4 x M10x40	2.85	
RS-635075014030	75 x 14	102 ÷ 105	Ms	155	157	77	4 x M8x25	3.90	
RS-636080008030	80 x 8	94 ÷ 97	Ms	138	140			4 x M8x25	1.40
RS-636080008040			Al						0.47
RS-636080010030	80 x 10	99 ÷ 102	Ms	148	150	120	4 x M10x40		0.80
RS-636080010040			Al	141	142			0.51	
RS-637100008020	100 x 8	114 ÷ 119	SS	164	167			120	4 x M10x40
RS-637100008030			Ms			3.40			
RS-637100008040			Al			1.19			
RS-637100010030	100 x 10	118 ÷ 122	Ms	185	187	145	6 x M12x50	5.60	
RS-637100010040			Al	167	169			1.15	
RS-637100012030	100 x 12	122 ÷ 126	Ms	185	187			182	6 x M12x50
RS-637100012040			Al	174	176	1.40			
RS-637100014030	100 x 14	126 ÷ 130	Ms	185	187	243	8 x M12x60		
RS-637100014040			Al	180	182			1.35	
RS-637100016030	100 x 16	130 ÷ 134	Ms	185	187			243	8 x M12x60
RS-637100016040			Al			1.40			
RS-637125010030	125 x 10	143 ÷ 148	Ms	211	214	145	6 x M12x50		
RS-637125010040			Al	190	192		6 x M10x50	1.40	
RS-637125013030	125 x13	149 ÷ 154	Ms	211	214		182	6 x M12x50	7.25
RS-637125013040			Al			2.65			
RS-637125015030	125 x15	153 ÷ 158	Ms	218	224	243			8 x M12x60
RS-637125015040			Al				2.85		
RS-637150010040	150 x10	168 ÷ 174	Al	231	235		182	6 x M12x50	
RS-637150013040	150 x13	174 ÷ 180	Al	233	237	3.30			
RS-637150015040	150 x15	178 ÷ 184	Al	244	248	3.70			
RS-637200012040	200 x12	222 ÷ 229	Al	288	291	243	8 x M12x60	6.50	
RS-637200016040	200 x16	230 ÷ 239	Al	294	298			6.75	

# INDUSTRIAL FITTINGS - clips, clamps, ferrules

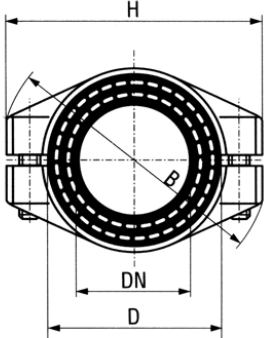
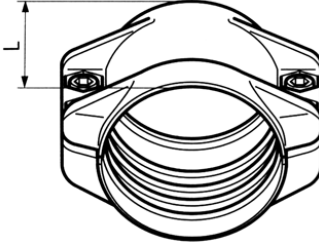
## Safety clamps EN 14420-3 (DIN 2817)

**Material:** Aluminium

**Working press.:** 25 bar (EN 14420-3)

Safety clamp in economic version designed to assemble a hose on a fitting with a safety collar.

DN - hose inside diameter x hose wall thickness.

	code	DN [mm]	D min+max [mm]	material	dimensions [mm]		
					H	B	L
	TI-SC-013-050-AL	13 x 5	22 ÷ 24	Al	50	51	59
	TI-SC-019-060-AL	19 x 6	30 ÷ 33	Al	50	63	68
	TI-SC-025-060-AL	25 x 6	36 ÷ 39	Al	50	69	75
	TI-SC-025-080-AL	25 x 8	40 ÷ 43	Al	50	76	79
	TI-SC-032-060-AL	32 x 6	43 ÷ 46	Al	50	76	77
	TI-SC-032-080-AL	32 x 8	47 ÷ 50	Al	50	76	85
	TI-SC-038-065-AL	38 x 6.5	50 ÷ 53	Al	50	83	85
	TI-SC-038-080-AL	38 x 8	53 ÷ 56	Al	50	85	87
	TI-SC-038-100-AL	38 x 10	57 ÷ 60	Al	50	85	92
	TI-SC-040-070-AL	40 x 7	53 ÷ 56	Al	50	85	87
	TI-SC-045-070-AL	45 x 7	58 ÷ 61	Al	57	98	101
	TI-SC-050-060-AL	50 x 6	61 ÷ 65	Al	56	98	103
	TI-SC-050-080-AL	50 x 8	63 ÷ 67	Al	56	102	106
	TI-SC-050-100-AL	50 x 10	69 ÷ 71	Al	56	106	110
	TI-SC-063-080-AL	63 x 8	78 ÷ 82	Al	74	120	121
	TI-SC-063-100-AL	63 x 10	82 ÷ 85	Al	74	124	126
	TI-SC-075-080-AL	75 x 8	89 ÷ 94	Al	76	132	133
	TI-SC-075-100-AL	75 x 10	94 ÷ 97	Al	76	136	140
	TI-SC-075-120-AL	75 x 12	99 ÷ 102	Al	77	148	142
	TI-SC-080-080-AL	80 x 8	94 ÷ 97	Al	76	137	140
	TI-SC-100-080-AL	100 x 8	114 ÷ 119	Al	120	166	167
	TI-SC-100-100-AL	100 x 10	118 ÷ 122	Al	120	170	169
	TI-SC-100-120-AL	100 x 12	122 ÷ 126	Al	120	174	176
	TI-SC-100-140-AL	100 x 14	126 ÷ 130	Al	120	185	182
	TI-SC-100-160-AL	100 x 16	130 ÷ 134	Al	120	185	187
	TI-SC-125-100-AL	125 x 10	143 ÷ 148	Al	147	192	192
	TI-SC-150-100-AL	150 x 10	167 ÷ 173	Al	180	227	235
	TI-SC-150-130-AL	150 x 13	174 ÷ 180	Al	182	233	237
	TI-SC-200-120-AL	200 x 12	222 ÷ 229	Al	240	284	291

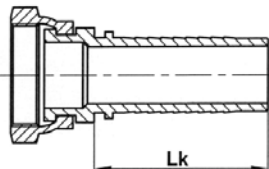


# INDUSTRIAL FITTINGS - clips, clamps, ferrules

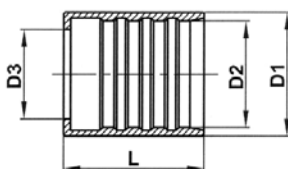
## Crimping ferrules for industrial hoses - L type

L type ferrules are used to assemble hydraulic type fittings (the same type as Z type high-pressure fittings) on industrial hoses (both rubber and plastic with textile reinforcement or reinforcing spiral - suction-delivery hoses). In order to select an appropriate ferrule, hose outside and inside diameter must be taken into account. The length of the ferrule L must not exceed the length of the fitting's hose tail. Ferrules made of AISI 316 available on request.

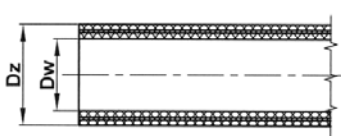
hydraulic type fitting



ferrule - L type



rubber or plastic hose



code (galvanized steel)	code (AISI 304)	hose I.D.		D1 [mm]	D2 [mm]	D3 [mm]	L [mm]
		[inch]	[mm]				
TI-L-15-04	TI-L-15-04-SS	1/4	6	19	15	11.6	30
TI-L-15-05	TI-L-15-05-SS	5/16	8	19	15	13.2	
TI-L-17-05	TI-L-17-05-SS			21	17		
TI-L-19-05	TI-L-19-05-SS			23	19		
TI-L-16-06	TI-L-16-06-SS	3/8	10	20	16	14.8	32
TI-L-18-06	TI-L-18-06-SS			22	18		
TI-L-19-06	TI-L-19-06-SS			23	19		
TI-L-20-06	TI-L-20-06-SS			24	20		
TI-L-24-06	TI-L-24-06-SS	1/2	12 ÷ 13	28.4	24	18.6	34
TI-L-22-08	TI-L-22-08-SS			27	21.5		
TI-L-24-08	TI-L-24-08-SS			29.5	24		
TI-L-26-08	TI-L-26-08-SS			30	25.5		
TI-L-28-08	TI-L-28-08-SS	5/8	16	33	28	21.4	36.5
TI-L-25-10	TI-L-25-10-SS			30	25		
TI-L-28-10	TI-L-28-10-SS			33	28		
TI-L-30-10	TI-L-30-10-SS			35	30		
TI-L-30-12	TI-L-30-12-SS	3/4	19 ÷ 20	36	30	24.8	40
TI-L-33-12	TI-L-33-12-SS			39	33		
TI-L-37-16	TI-L-37-16-SS	1	25	43	37	31	50
TI-L-39-16	TI-L-39-16-SS			45	39		51.5
TI-L-41-16	TI-L-41-16-SS			47	41		58
TI-L-45-20	TI-L-45-20-SS	1.1/4	32	52	45	38.2	
TI-L-48-20	TI-L-48-20-SS			55	48	60	
TI-L-50-20	TI-L-50-20-SS			57	50		
TI-L-53-20	TI-L-53-20-SS	1.1/2	38 ÷ 40	62	53	44.8	64
TI-L-52-24	TI-L-52-24-SS			59	52		
TI-L-54-24	TI-L-54-24-SS			61	54		
TI-L-56-24	TI-L-56-24-SS			63	56		
TI-L-58-24	TI-L-58-24-SS	2	50 ÷ 51	65	58	57	70
TI-L-64-32	TI-L-64-32-SS			73	64		
TI-L-67-32	TI-L-67-32-SS			76	67		
TI-L-70-32	TI-L-70-32-SS	2.1/2	63 ÷ 65	76.1	69.8	71	92
TI-L-82-40	TI-L-82-40-SS			89.8	82		
TI-L-96-48	TI-L-96-48-SS	3	75 ÷ 80	106.4	96	88	



### Example:

Hose for water IV-PATOS-13 with inside diameter  $D_w = 13$  mm, outside diameter  $D_z = 23$  mm, fittings TI-ZBW110-08-08, crimping ferrule TI-L-24-08. Crimped in accordance with IT-14.

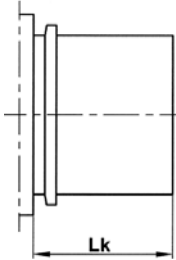
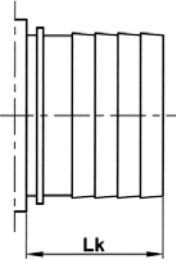
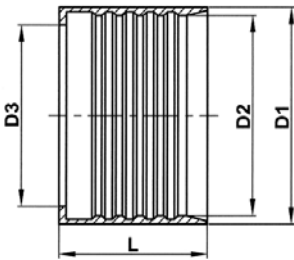

### Attention!

To crimp rubber and plastic hoses with textile reinforcement, properly selected ferrules for high-pressure thermoplastic hoses can also be used (ZC-..., MC-...).

# INDUSTRIAL FITTINGS - clips, clamps, ferrules

## Crimping ferrules for industrial hoses - LDR, LD, LR types

LDR, LD, LR type ferrules designed to crimp stainless steel hygienic fittings (with serrated hose tail) of NH...K... type and hose fittings with tails for safety clamps - RS, e.g. TW-KRS-..., NH...R... on industrial hoses (rubber and plastic with textile reinforcement, optionally with steel wire reinforcement - suction-delivery hoses). Inside Dw and outside Dz hose diameter must be taken into account when selecting the ferrule. The length of the ferrule L can be slightly (several mm) longer than the length of the fitting's hose tail Lk. LR ferrules - only for fittings for safety clamps, LD - only for NH-..., K-... type fittings. Ferrules made of AISI 316 steel available on request.

		fitting for safety clamp assembly		NH... K... type fitting	LDR, LR, LD type ferrule	rubber or plastic hose	
							
code (galvanized steel)	code (AISI 304)	hose I.D.		D1 [mm]	D2 [mm]	D3 [mm]	L [mm]
		[inch]	[mm]				
-	TI-LD-024-08-SS	1/2	12 ÷ 13	29.5	24	20	26
-	TI-LD-026-10-SS	5/8	16	31.5	26	21.4	26
-	TI-LD-030-12-SS	3/4	19 ÷ 20	36	30	25	33
-	TI-LR-030-12-SS			37		27	47
-	TI-LR-033-12-SS			40	33		
-	TI-LD-037-16-SS	1	25	43	37	32	33.5
TI-LR-037-16	TI-LR-037-16-SS			44		33	47
TI-LD-040-16	TI-LD-040-16-SS			46	40	32	33.5
TI-LR-040-16	TI-LR-040-16-SS			47		33	47
-	TI-LDR-042-20-SS	1.1/4	32	49	42	40	47
TI-LDR-045-20	TI-LDR-045-20-SS			52	45		
TI-LDR-048-20	TI-LDR-048-20-SS			55	48		
TI-LDR-050-24	TI-LDR-050-24-SS	1.1/2	38 ÷ 40	58	50	45.8	48
TI-LDR-056-24	TI-LDR-056-24-SS			63.6	56	45.2	47
-	TI-LDR-062-32-SS	2	50 ÷ 51	70	62	59	54
TI-LDR-064-32	TI-LDR-064-32-SS			72	64	59	54
TI-LDR-068-32	TI-LDR-068-32-SS			76	68		
TI-LDR-071-32	TI-LDR-071-32-SS			79	71		
TI-LDR-073-32	TI-LDR-073-32-SS			81	73		
TI-LDR-078-40	TI-LDR-078-40-SS	2.1/2	63 ÷ 65	86	78	74	68
TI-LDR-082-40	TI-LDR-082-40-SS			90	82		
TI-LDR-085-40	TI-LDR-085-40-SS			93	85		
TI-LDR-092-40	TI-LDR-092-40-SS			100	92		
TI-LDR-090-48	-	3	75 ÷ 80	98	90	86	73
TI-LDR-092-48	TI-LDR-092-48-SS			100	92		
TI-LDR-095-48	TI-LDR-095-48-SS			103	95		
TI-LDR-098-48	TI-LDR-098-48-SS			106	98		
TI-LDR-114-48	TI-LDR-114-48-SS			123	114		
TI-LR-115-64	-	4	100 ÷ 102		115	111	105
-	TI-LD-119-64-SS			127	119		73.5
TI-LR-120-64	TI-LR-120-64-SS			128	120		105
TI-LD-123-64	TI-LD-123-64-SS						73.5
TI-LR-123-64	TI-LR-123-64-SS			131	123		105
-	TI-LR-128-64-SS	5	125 ÷ 127	136	128	138.6	150.5
-	TI-LR-148-80-SS			157.6	148		

# INDUSTRIAL FITTINGS - clips, clamps, ferrules



## RUBBER P-CLIP

Clamp designed for secure and vibration-damping suspension of pipes, cables, hoses, etc. It consists of a bent steel clip and a rubber flange profile. The rubber profile dampens mechanical impact and vibrations as well as protects cables and hoses against damage. The clip is made of galvanized carbon steel or AISI 304 steel, the profile of EPDM rubber resistant to water, abrasion, temperature changes and ageing.

W1 code (galv. steel)	W4 code (AISI 304)	I.D. [mm]	band width [mm]	bore diameter [mm]	W1 code (galv. steel)	W4 code (AISI 304)	I.D. [mm]	band width [mm]	bore diameter [mm]
AB-03003856	AB-43003859	5	12	5.3	AB-03004867	AB-43004860	26	15	6.4
AB-03003864	AB-43003867	6			AB-03004883	AB-43004886	28		
AB-03003872	AB-43003875	7			AB-03004904	AB-43004907	30		
AB-03003880	AB-43003883	8			AB-03004939	AB-43004931	33		
AB-03003899	AB-43003891	9			AB-03004920	AB-43004923	32		
AB-03003901	AB-43003904	10			AB-03004947	AB-43004940	34		
AB-03003928	AB-43003920	12			AB-03004955	AB-43004958	35		
AB-03003936	AB-43003939	13			AB-03004963	AB-43004966	36		
AB-03003944	AB-43003947	14			AB-03004971	AB-43004974	37		
AB-03003952	AB-43003955	15			AB-03004980	AB-43004982	38		
AB-03003960	AB-43003963	16			AB-03005000	AB-43005002	40		
AB-03003979	AB-43003971	17			AB-03005050	AB-43005053	45		
AB-03003987	AB-43003980	18			AB-03005077	-	47		
AB-03003995	AB-43003998	19			AB-03005106	AB-43005109	50		
AB-03004007	AB-43004000	20			AB-03005253	-	65		
AB-03004015	AB-43004018	21			AB-03005341	-	74		
AB-03004023	AB-43004026	22			AB-03005405	-	80		
AB-03004031	AB-43004034	23			AB-03005510	AB-43005512	11	20	8.4
AB-03004040	AB-43004042	24			AB-03005528	AB-43005520	12		
AB-03004058	AB-43004050	25			AB-03005536	AB-43005539	13		
AB-03004066	AB-43004069	26			AB-03005544	AB-43005547	14		
AB-03004074	AB-43004077	27			AB-03005552	AB-43005555	15		
AB-03004082	AB-43004085	28			AB-03005560	AB-43005563	16		
AB-03004162	-	36			AB-03005579	AB-43005571	18		
AB-03004200	AB-43004200	40			AB-03005587	AB-43005580	19		
AB-03004306	-	50			AB-03005595	AB-43005598	20		
AB-03004402	-	60			AB-03005608	AB-43005600	21		
AB-03004556	AB-43004659	5	15	6.4	AB-03005616	AB-43005619	22		
AB-03004664	AB-43004667	6			AB-03005624	AB-43005627	23		
AB-03004680	AB-43004683	8			AB-03005632	AB-43005635	24		
AB-03004701	AB-43004704	10			AB-03005640	AB-43005643	25		
AB-03004710	AB-43004712	11			AB-03005667	AB-43005661	27		
AB-03004728	AB-43004720	12			AB-03005675	AB-43005670	28		
AB-03004736	AB-43004739	13			AB-03005691	AB-43005696	30		
AB-03004744	AB-43004747	14			AB-03005712	AB-43005715	32		
AB-03004752	AB-43004755	15			AB-03005739	AB-43005731	34		
AB-03004760	AB-43004763	16			AB-03005747	AB-43005740	35		
AB-03004779	AB-43004771	17			AB-03005755	AB-43005758	36		
AB-03004787	AB-43004780	18			AB-03005771	AB-43005774	38		
AB-03004795	AB-43004798	19			AB-03005798	AB-43005790	40		
AB-03004808	AB-43004800	20			AB-03005894	AB-43005899	50		
AB-03004816	AB-43004819	21			AB-03006168	AB-43006160	77		
AB-03004824	AB-43004827	22			AB-03006299	AB-43006290	90		
AB-03004832	AB-43004835	23			-	AB-43006299	98		
AB-03004859	AB-43004851	25			AB-03007163	-	110		

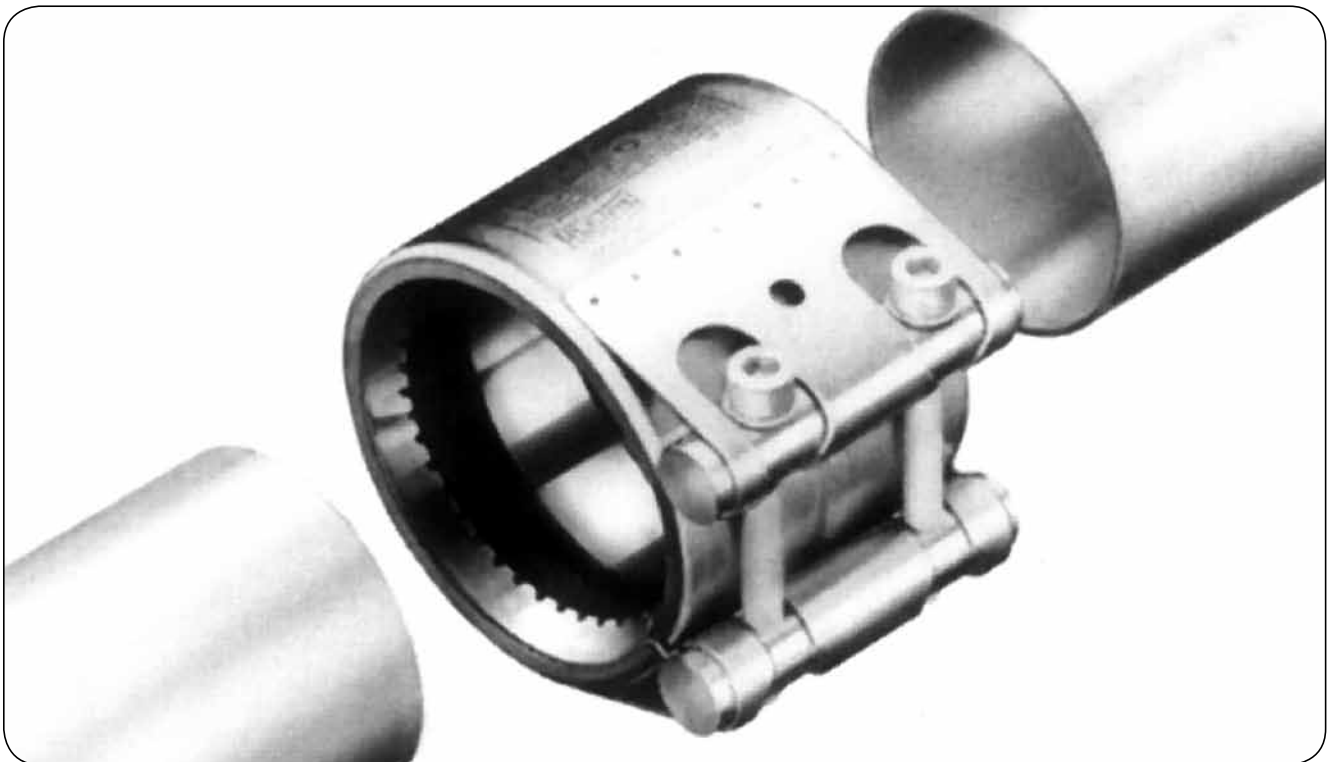
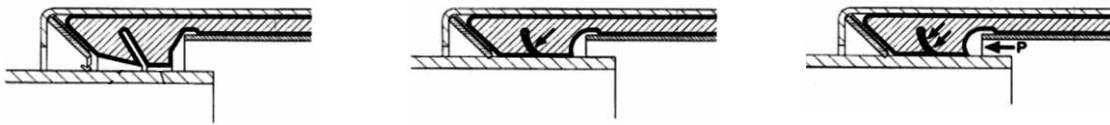
### NORMACONNECT® pipe couplings

NORMACONNECT® pipe coupling is a reliable solution for connecting thick and thin walled pipes made of metal as well as other materials. Complies with the latest DIN 86128 standard. Widely used in:

- gas installations, fluid and solids transfer,
- construction,
- mining and deep exploitation,
- shipbuilding,
- fresh water supply and waste water treatment.

NORMACONNECT® pipe coupling is an economical alternative to conventional pipe connecting techniques for both plastic and metal pipes. All plain pipes can be fast and easily joined. The coupling is supplied as a ready-to-fit set. It is pushed onto the pipes ends, aligned and rotated to any radial fitting position. For safe and successful fitting it is enough to tighten the two bolts alternately with a torque wrench. Coupling is also reliable and tight under the condition of angular or parallel deflection of pipe axes up to 35 mm. Abrupt pressure changes, vibration and structure-born noise appearing in a pipe are considerably dampened by the coupling. NORMACONNECT® pipe coupling is light, handy, compact and can be easily fitted in tight and inaccessible spaces.

The patented double-lip sealing ring applied in NORMACONNECT® pipe coupling ensures increased safety and maximum tightness at both low and high working pressure. Due to special design of sealing lips, the efficiency of sealing rises as internal pressure rises. It is achieved when the sealing lips of the ring are pressed even stronger onto the pipe surface under pressure.



## INDUSTRIAL FITTINGS - clips, clamps, ferrules



### NORMACONNECT® FLEX

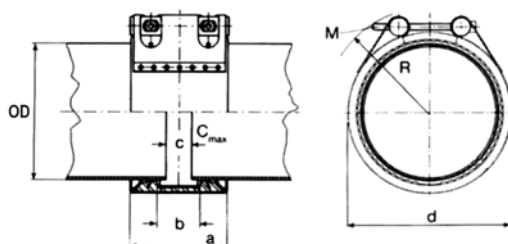
**Material:** Housing - AISI 304 steel  
Bolts - AISI 316L steel  
Pins - AISI 304 steel  
Claw ring - AISI 301 steel  
Band insert - AISI 316T steel i

**Working temp.:** From -20°C up to +80°C (NBR sealing)  
From -30°C up to +125°C (EPDM sealing)

Couplings used to join metal and plastic pipes which are not under large mechanical load. The double-lip sealing ring guarantees that the connection is highly resistant to pressure and vacuum. The protection ring used in this version protects the sealing ring against UV light radiation, flame, etc.

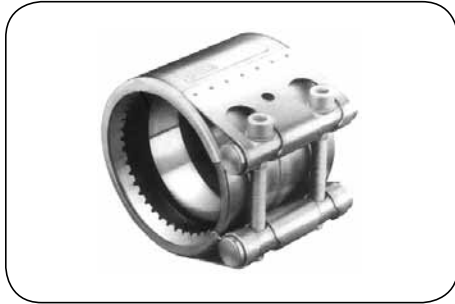
code	pipe O.D. [mm]	clamp diam. range [mm]	nominal pressure [bar]	a [mm]	b [mm]	C max [mm]	d [mm]	R [mm]	bolt	weight [kg]
VA-FW4-026-N	26.9	26.4 ÷ 27.4	16	47	9.5	3	44	46	M8	0.40
VA-FW4-028-N	28.0	27.5 ÷ 28.5	16	47	9.5	3	45	45	M8	0.40
VA-FW4-030-N	30.0	28.6 ÷ 30.5	16	47	9.5	3	45	45	M8	0.40
VA-FW4-033-N	33.7	30.6 ÷ 34.2	16	47	9.5	3	51	45	M8	0.40
VA-FW4-035-N	35.0	34.5 ÷ 35.5	16	62.4	14.4	8	55	51	M8	0.50
VA-FW4-038-N	38.0	35.6 ÷ 38.5	16	62.4	14.4	8	57	45	M8	0.50
VA-FW4-042-N	42.4	39.0 ÷ 42.9	16	62.4	14.4	8	62	50	M8	0.50
VA-FW4-044-N	44.5	43.0 ÷ 45.0	16	62.4	14.4	8	63	50	M8	0.50
VA-FW4-048-N	48.3	45.5 ÷ 48.8	16	62.4	14.4	8	68	51	M8	0.60
VA-FW4-054-N	54.0	53.6 ÷ 54.9	16	77.4	29.4	17	73	57	M8	0.70
VA-FW4-057-N	57.0	55.0 ÷ 57.6	16	77.4	29.4	17	78	54	M8	0.70
VA-FW4-060-N	60.3	57.7 ÷ 60.9	16	77.4	29.4	17	79	56	M8	0.80
VA-FW4-076-N	76.1	74.0 ÷ 76.9	16	98	40.3	25	100	73	M8	1.40
VA-FW4-084-N	84.0	83.0 ÷ 85.0	16	98	40.3	25	108	78	M8	1.40
VA-FW4-088-N	88.9	85.1 ÷ 89.8	16	98	40.3	25	111	79	M8	1.40
VA-FW4-104-N	104.0	103.0 ÷ 106.0	16	98	40.3	25	126	91	M8	1.60
VA-FW4-108-N	108.0	106.9 ÷ 109.1	16	98	40.3	25	131	80	M8	1.80
VA-FW4-114-N	114.3	112.0 ÷ 115.4	16	98	40.3	25	137	85	M8	1.80
VA-FW4-129-N	129.0	128.0 ÷ 131.0	16	113	50	35	153	102	M10	2.40
VA-FW4-133-N	133.0	131.0 ÷ 134.3	16	113	50	35	160	106	M10	2.40
VA-FW4-139-N	139.7	137.0 ÷ 141.1	16	113	50	35	166	111	M10	2.60
VA-FW4-154-N	154.0	153.0 ÷ 156.0	16	113	50	35	180	131	M10	2.70
VA-FW4-159-N	159.0	157.0 ÷ 160.6	16	113	50	35	186	116	M10	2.70
VA-FW4-168-N	168.3	166.0 ÷ 170.0	16	113	50	35	194	121	M10	2.80

Code example of a coupling with EPDM sealing: VA-FW4-060-E.





# INDUSTRIAL FITTINGS - clips, clamps, ferrules



## NORMACONNECT® GRIP

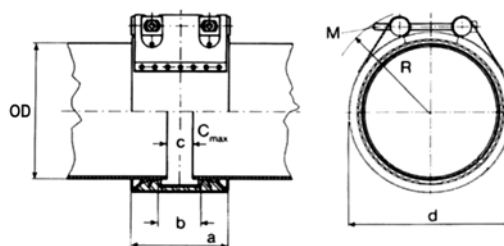
**Material:** Housing - AISI 304 steel  
Bolts - AISI 316L steel  
Pins - AISI 304 steel  
Anchoring ring - AISI 316Ti steel  
Claw ring - AISI 301 steel  
Band insert - AISI 316Ti steel

**Working temp.:** From -20°C up to +80°C (NBR sealing)  
From -30°C up to +125°C (EPDM sealing)

Couplings used to join metal pipes operating under large mechanical load. The anchoring ring strongly grips the pipe surface with its conically stamped teeth. Due to special design of the anchoring ring, the coupling resists high vibration. The double-lip sealing ring guarantees that the connection is highly resistant to pressure and vacuum.

code	pipe O.D. [mm]	clamp diam. range [mm]	nominal pressure [bar]	a [mm]	b [mm]	C max [mm]	d [mm]	R [mm]	bolt	weight [kg]
VA-GW4-026-N	26.9	26.4 ÷ 27.4	16	47	9.5	3	44	44	M8	0.40
VA-GW4-028-N	28.0	27.5 ÷ 28.5	16	47	9.5	3	45	45	M8	0.40
VA-GW4-030-N	30.0	28.6 ÷ 30.5	16	47	9.5	3	45	45	M8	0.40
VA-GW4-033-N	33.7	30.6 ÷ 34.2	16	47	9.5	3	51	46	M8	0.40
VA-GW4-035-N	35.0	34.5 ÷ 35.5	16	62.4	14.4	8	55	51	M8	0.50
VA-GW4-038-N	38.0	35.6 ÷ 38.5	16	62.4	14.4	8	57	48	M8	0.50
VA-GW4-042-N	42.4	39.0 ÷ 42.9	16	62.4	14.4	8	62	50	M8	0.60
VA-GW4-044-N	44.5	43.0 ÷ 45.0	16	62.4	14.4	8	63	50	M8	0.60
VA-GW4-048-N	48.3	45.5 ÷ 48.8	16	62.4	14.4	8	68	53	M8	0.60
VA-GW4-054-N	54.0	53.6 ÷ 54.9	16	77.4	29.4	17	73	57	M8	0.80
VA-GW4-057-N	57.0	55.0 ÷ 57.6	16	77.4	29.4	17	78	55	M8	0.80
VA-GW4-060-N	60.3	57.7 ÷ 60.9	16	77.4	29.4	17	79	69	M8	0.80
VA-GW4-076-N	76.1	74.0 ÷ 76.9	16	98	40.3	25	100	75	M10	1.50
VA-GW4-084-N	84.0	83.0 ÷ 85.0	16	98	40.3	25	108	76	M10	1.60
VA-GW4-088-N	88.9	85.1 ÷ 89.8	16	98	40.3	25	111	80	M10	1.70
VA-GW4-104-N	104.0	103.0 ÷ 106.0	16	98	40.3	25	126	77	M10	1.80
VA-GW4-108-N	108.0	106.9 ÷ 109.1	16	98	40.3	25	131	86	M10	1.80
VA-GW4-114-N	114.3	112.0 ÷ 115.4	16	98	40.3	25	137	88	M10	1.80
VA-GW4-129-N	129.0	128.0 ÷ 131.0	16	115	50	35	153	101	M12	3.10
VA-GW4-133-N	133.0	131.0 ÷ 134.3	16	115	50	35	160	106	M12	3.30
VA-GW4-139-N	139.7	137.0 ÷ 141.1	16	115	50	35	166	109	M12	3.30
VA-GW4-154-N	154.0	153.0 ÷ 156.0	16	115	50	35	180	110	M12	3.40
VA-GW4-159-N	159.0	157.0 ÷ 160.6	16	115	50	35	186	118	M12	3.50
VA-GW4-168-N	168.3	166.0 ÷ 170.0	16	115	50	35	194	115	M12	3.60

Code example of a coupling with EPDM sealing: VA-GW4-060-E.



## HIGH PRESSURE - hoses

### Hydraulic rubber hoses

Rubber hydraulic hoses are used in high pressure hydraulic systems for control and power supply. They are designed to transfer hydraulic oil primarily (hydraulic fluid compliant with ISO 6743-4, apart from HFD R, HFD S and HFD T fire-resistant fluids). **For other applications (e.g. for compressed gases) always contact Technical Department of TUBES INTERNATIONAL®.** For water, water-based fluids and air, the maximum working temperature is +70°C. For air over 17 bar, the external layer of the hose should be pinpricked and have additional protection.

Typical hydraulic rubber hoses can be classified into three different construction types:



Hoses with textile braid  
(one or two)



Hoses with compacted  
steel wire braids  
(one, two or three)



Hoses with steel wire spirals  
(four or six)

Hydraulic rubber hoses are manufactured in imperial size with standardized inside diameter.

The most popular standards setting the requirements for hoses are: European standards - EN, international ISO and American SAE. The symbol of the standard and the most important data (diameter, working pressure and production date) are marked on the hose. Additionally, there may be a specific name on the hose that is given by a producer or customer.



hose name

standard

inside  
diameter

working  
pressure

production date

**Table for initial hydraulic hose selection**

Maximum working pressure [bar]  
1 bar = 0.1 MPa

hose type				working pressure [bar]										
				3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"	1.1/2"	2"
code TUBES	standards			DN										
	European	international	American	5	6	8	10	12	16	20	25	32	38	51
HW-2TE	EN 854 2TE	ISO 4079-1 2TE	-	80	75	68	63	58	50	45	40	-	-	-
HW-3TE	EN 854 3TE	ISO 4079-1 3TE	-	160	145	130	110	93	80	70	55	-	-	-
HW-1SN	EN 853 1SN	ISO 1436-1SN	SAE 100 R1AT	250	225	215	180	160	130	105	88	63	50	40
HW-1SC	EN 857 1SC	ISO 11237-1 1SC	-	-	225	215	180	160	130	105	88	-	-	-
HW-2SN	EN 853 2SN	ISO 1436-2SN	SAE 100 R2AT	415	400	350	330	275	250	215	165	125	90	80
HW-2SC	EN 857 2SC	ISO 11237-1 2SC	-	-	400	350	330	275	250	215	165	-	-	-
HW-4SP	EN 856 4SP	ISO 3862-1 4SP	-	-	450	-	445	415	350	350	280	210	185	165
HW-4SH	EN 856 4SH	ISO 3862-1 4SH	-	-	-	-	-	-	-	420	380	325	290	250
HW-R12	EN 856 R12	ISO 3862-1 R12	SAE 100 R12	-	-	-	-	-	-	280	280	280	280	280
HW-R13	EN 856 R13	ISO 3862-1 R13	SAE 100 R13	-	-	-	-	-	-	345	345	345	345	345
HW-R15	-	ISO 3862-1 R15	SAE 100 R15	-	-	-	-	-	-	420	420	420	420	-

Apart from regular hydraulic rubber hoses manufactured according to the standards above, there are also hoses that exceed these standards (see next page).

## HIGH PRESSURE - hoses

### Superior flexibility

Hydraulic hoses with minimum bend radius smaller than standard are much more flexible.

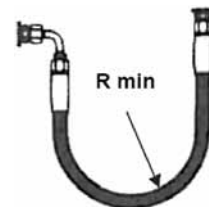
Example:



HW-2SN-10P - min. bend radius  $R = 125$  mm  
(meets the requirements of EN 853 2SN)



HW-2SC-10P - min. bend radius  $R = 65$  mm  
(exceeds the requirements of EN 857 2SC)



### Superior pressure parameters

The maximum working pressure of some hydraulic hoses exceeds standard requirements. The hoses can be easily used for applications with the same safety factor without need to change the diameter (e.g. for smaller one) or change hose type (from double braid to hose with steel wire spirals).

Example:



HW-2SC-12P - maximum working pressure 275 bar  
(COMPACT hose meets the requirements of EN 857 2SC)



HW-2SC-BE-K-12P - maximum working pressure 325 bar  
(COMPACT hose exceeds the requirements of EN 857 2SC)

### Superior temperature parameters

There is a defined working temperature range for each hydraulic hose type. For hoses with textile braids (2TE, 3TE), steel wire braids (1SC, 2SC, 1SN, 2SN), and for some groups of hoses with steel wire spiral (4SP, 4SH), the working temperature ranges from  $-40^{\circ}\text{C}$  up to  $+100^{\circ}\text{C}$  (with peaks up to  $+125^{\circ}\text{C}$ ). For hoses with steel wire spirals, constant pressure independent of diameter (R12, R13, R15), the temperature ranges from  $-40^{\circ}\text{C}$  up to  $+121^{\circ}\text{C}$  (with peaks up to  $+125^{\circ}\text{C}$ ).

The working temperature of a hydraulic system may be higher than the one above. Then the use of standard hoses is not recommended. If the maximum working temperature of the hydraulic rubber hose is exceeded, the rubber hardens so its flexibility is limited. What is more, the assembly is no longer tight and leaks start to occur at the hose ends, where the fittings are. In such cases, the hoses with a superior temperature range should be used.

Example:



HW-...-HT is a group of hoses with a temperature range extended to  $+135^{\circ}\text{C}$  (with peaks up to  $+150^{\circ}\text{C}$ ) at maximum ambient temperature around  $+100^{\circ}\text{C}$ .

### Superior abrasion resistance

Hydraulic rubber hoses manufactured according to the regular standards have limited abrasion resistance of the external layer. Abrasion tests are carried out according to EN ISO 6945 standard. It defines the weight loss of a hose sample after a number of cycles of longitudinally applied load (e.g. the maximum weight loss for hoses of 1SN and 2SN type is 0.5 g after 2.000 cycles of longitudinal load of  $25 \pm 0.5$  N).

In order to increase the abrasion resistance of hoses, manufacturers apply an additional layer (e.g. UHMWPE Ultra-High Molecular Weight Polyethylene - cross-linked PE). Then, there is no need for adding any extra protection covers (e.g. spirals).


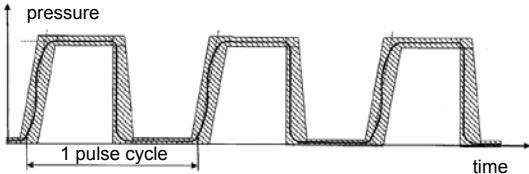
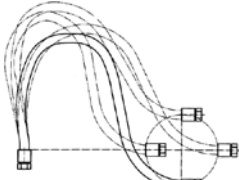
# HIGH PRESSURE - hoses

## Superior service life

When hydraulic rubber hoses operate under actual service conditions, their service life depends on many factors of which the crucial ones are:

- fatigue strength of a flexible hose assembly under variable internal pressure, bending as well as internal and external temperature changes,
- aging resistance (natural loss of mechanical properties of hose material),
- resistance to external impact.

The fatigue strength of a hose assembly can be estimated through hydraulic tests with the use of pulsating pressure with or without cyclic bending. Specific requirements for the tests are described in standards (ISO 6803, ISO 6802, ISO 8032). The standards determine the required pulsating pressure endurance defined as the number of pulsating pressure cycles (impulses). Frequency of pulsating pressure is quite high (around 1 Hz), testing pressure rises from 100% to 133% of the maximum working pressure and temperature during test is elevated (+100°C). Note that the obtained results are not fully reliable in terms of service life under actual operating conditions of the hose. However they help to determine whether the hose meets or even exceeds the relevant standard requirements and allow to compare the hose parameters of different producers.

actual service life of hydraulic hose	service life of hydraulic hose during the tests described above
	<p>pressure impulses</p>  <p>hose bending</p> 
years (months) of operation until breakdown	thousands of cycles (bends) until breakdown

Examples:

The EN 853 standard requires the hose of 2SN type to withstand the minimum of 200,000 impulse cycles at pulsating pressure which amounts to 133% of the maximum working pressure.



HW-2SN-...P hoses  
Confirmed service life of 400,000 impulse cycles.

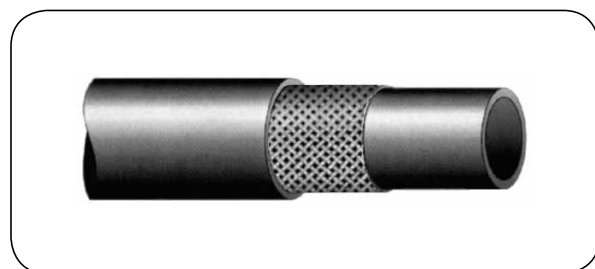
The EN 857 standard requires the hose of 4SH type to withstand the minimum of 400,000 impulse cycles at pulsating pressure which amounts to 133% of the maximum working pressure.



HW-4SH-...P hoses  
Confirmed service life of 1,000,000 impulse cycles.

## HIGH PRESSURE - hoses

### Hydraulic rubber hoses



#### HW-2TE (HW-2TE-EC045)

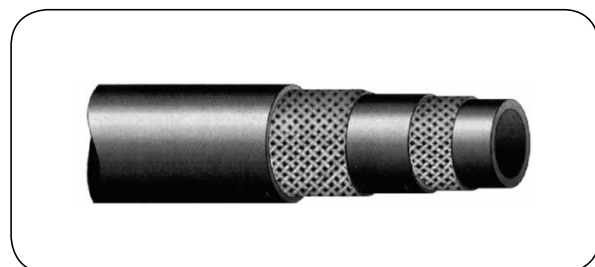
**Internal layer:** Black synthetic rubber  
**Reinforcement:** One textile braid  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C

**Characteristics:** General purpose hydraulic hose. Designed for low pressure installations. It is highly flexible and lightweight.

**Standards:** EN 854 2TE (HW-2TE-EC045 also compliant with EN45545-2.

**Assembly:** Use Z type fittings - non-skived (IT-50).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-2TE-05	4.8	11.8	80	320	25	0.11
HW-2TE-06	6.4	13.4	75	300	40	0.14
HW-2TE-08	8	14.9	68	270	50	0.17
HW-2TE-10	9.5	16.5	63	252	60	0.19
HW-2TE-13	12.7	19.7	58	232	70	0.24
HW-2TE-16	16	23.9	50	200	90	0.33
HW-2TE-19	19	27	45	180	110	0.38
HW-2TE-25	25.4	34.4	40	160	150	0.57



#### HW-3TE

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Two textile braid  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C

**Characteristics:** General purpose hydraulic hose. Designed for low pressure installations. It is highly flexible and lightweight.

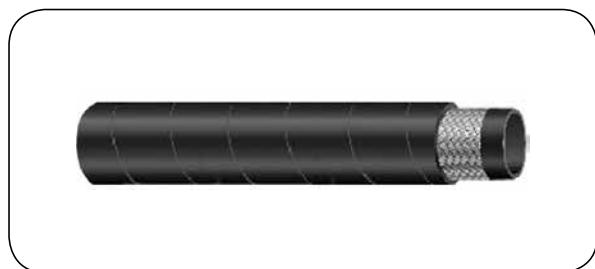
**Standards:** EN 854 3TE.

**Assembly:** Use Z type fittings - non-skived (IT-84).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-3TE-06	6.4	14.4	145	580	45	0.19
HW-3TE-08	8	16.9	130	520	55	0.25
HW-3TE-10	9.5	18.5	110	440	70	0.27
HW-3TE-13	12.7	21.7	93	372	85	0.34
HW-3TE-16	16	25.9	80	320	105	0.47
HW-3TE-19	19	29	70	280	130	0.54
HW-3TE-25	25.4	35.9	55	220	150	0.68

## HIGH PRESSURE - hoses

### Hydraulic rubber hoses



#### HW-1SN

**Internal layer:** Black synthetic rubber  
**Reinforcement:** One steel wire braid  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C  
 (with peaks up to +125°C)

**Characteristics:** General purpose hydraulic hose.

**Standards:** EN 853-1SN, ISO 1436-1SN/R1AT, SAE 100R1AT.

**Assembly:** Use Z and S type fittings - non-skived (IT-4, IT-37).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-1SN-05	4.8	11.6	250	1000	90	0.20
HW-1SN-06	6.4	13.3	225	900	100	0.23
HW-1SN-08	8	14.9	215	850	115	0.27
HW-1SN-10	9.5	17.3	180	720	130	0.34
HW-1SN-13	12.7	20.4	160	640	180	0.41
HW-1SN-16	16	23.5	130	520	200	0.51
HW-1SN-19	19	27.5	105	420	240	0.63
HW-1SN-25	25.4	35.4	88	350	300	0.95
HW-1SN-32	31.8	43.4	63	250	420	1.25
HW-1SN-38	38.1	50.1	50	200	500	1.59
HW-1SN-51	50.8	63.6	40	160	630	2.15



#### PERFORMER 1SN

**Internal layer:** Black synthetic rubber  
**Reinforcement:** One steel wire braid  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C  
 (with peaks up to +120°C)

**Characteristics:** General purpose hydraulic hose with service life exceeding the standard.

Service life: 300,000 impulse cycles min.

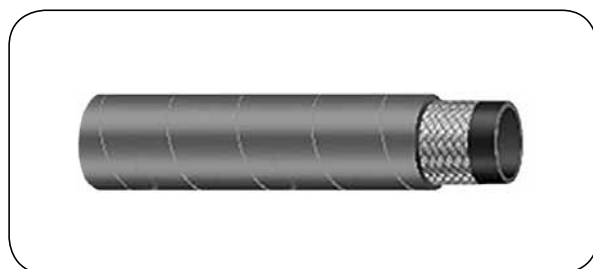
**Standards:** EN 853-1SN, ISO 1436-1SN, SAE 100R1S-AT.

**Assembly:** Use Z and S type fittings - non-skived (IT-4, IT-37).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-1SN-05P	4.8	11.5	250	1000	90	0.18
HW-1SN-06P	6.4	13.2	225	900	100	0.23
HW-1SN-08P	7.9	15	215	850	115	0.27
HW-1SN-10P	9.5	17.3	180	720	125	0.35
HW-1SN-13P	12.7	20.6	160	640	180	0.41
HW-1SN-16P	15.9	23.9	130	520	205	0.52
HW-1SN-19P	19	27.6	105	420	240	0.64
HW-1SN-25P	25.4	35.3	90	360	300	1.00
HW-1SN-32P	31.8	43.2	63	252	420	1.28
HW-1SN-38P	38.1	50.7	50	200	500	1.65
HW-1SN-51P	50.8	64.2	40	160	630	2.29

## HIGH PRESSURE - hoses

### Hydraulic rubber hoses (high temperature version)



#### ULTIMATE 1SN/HT

**Internal layer:** Black synthetic rubber  
**Reinforcement:** One steel wire braid  
**External layer:** Blue synthetic rubber  
**Working temp.:** From -50°C up to +135°C  
 (with peaks up to +150°C)

**Characteristics:** Hydraulic hose with wider working temperature range than required by the standard.

**Standards:** EN 853-1SN, ISO 1436-1SN, SAE 100R1-AT.

**Assembly:** Use Z and S type fittings - non-skived (IT-4, IT-37).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-1SN-HT-06S	6.4	13.2	225	900	100	0.24
HW-1SN-HT-08S	8	14.8	215	850	115	0.28
HW-1SN-HT-10S	9.5	17.2	180	720	130	0.36
HW-1SN-HT-13S	12.7	20.4	160	640	180	0.45
HW-1SN-HT-16S	16	23.5	130	520	200	0.55
HW-1SN-HT-19S	19	27.5	105	420	240	0.64
HW-1SN-HT-25S	25.4	35.4	88	350	300	0.96
HW-1SN-HT-32S	31.8	43.5	63	250	420	1.36
HW-1SN-HT-38S	38.1	50	50	200	500	1.54
HW-1SN-HT-51S	50.8	63.6	40	160	630	2.09



#### THERMAL 1SN/HT

**Internal layer:** Black synthetic rubber  
**Reinforcement:** One steel wire braid  
**External layer:** Blue synthetic rubber  
**Working temp.:** From -40°C up to +135°C  
 (with peaks up to +150°C)

**Characteristics:** Hydraulic hose with wider working temperature range than required by the standard. Service life: 300,000 impulse cycles min.

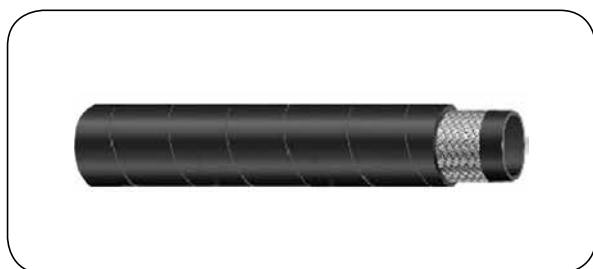
**Standards:** EN 853-1SN, ISO 1436-1SN, SAE 100R1S-AT.

**Assembly:** Use Z and S type fittings - non-skived (IT-4, IT-37).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-1SN-HT-06P	6.4	13.2	225	900	100	0.23
HW-1SN-HT-08P	7.9	15	215	860	115	0.28
HW-1SN-HT-10P	9.5	17.3	180	720	125	0.36
HW-1SN-HT-13P	12.7	20.6	160	640	180	0.42
HW-1SN-HT-16P	15.9	23.9	130	520	205	0.53
HW-1SN-HT-19P	19	27.6	105	420	240	0.65
HW-1SN-HT-25P	25.4	35.3	88	360	300	1.01
HW-1SN-HT-32P	31.8	43.2	63	252	420	1.29
HW-1SN-HT-38P	38.1	50.7	50	200	500	1.66
HW-1SN-HT-51P	50.8	64.2	40	160	630	2.32

## HIGH PRESSURE - hoses

### Hydraulic rubber hoses (compact version)



#### HW-1SC (HW-1SC-EC112)

**Internal layer:** Black synthetic rubber  
**Reinforcement:** One steel wire braid  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C  
 (with peaks up to +121°C)

**Characteristics:** General purpose hydraulic hose with reduced outside diameter and weight and thus increased flexibility. EC112 version meets the requirements of EN45545-2 standard.

**Standards:** EN 857-1SC, SAE 100R1 AT, EN45545-2 (concerns hoses with HW-1SC-EC112 code).

**Assembly:** Use Z type fittings - non-skived (IT-21).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-1SC-06	6.4	12.4	225	900	50	0.20
HW-1SC-08	8	14	215	860	55	0.22
HW-1SC-10	9.5	15.6	180	720	65	0.23
HW-1SC-13	12.7	18.7	160	640	90	0.35
HW-1SC-16	16	21.5	130	520	100	0.40
HW-1SC-19	19	25	105	420	120	0.48
HW-1SC-25	25.4	33.4	88	352	150	0.73



#### PROKOMP 1SC

**Internal layer:** Black synthetic rubber  
**Reinforcement:** One steel wire braid  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C  
 (with peaks up to +120°C)

**Characteristics:** General purpose hydraulic hose with reduced outside diameter and weight and thus increased flexibility (COMPACT type). Service life: 300,000 impulse cycles min.

**Standards:** EN 857-1SC, ISO 11237-1.

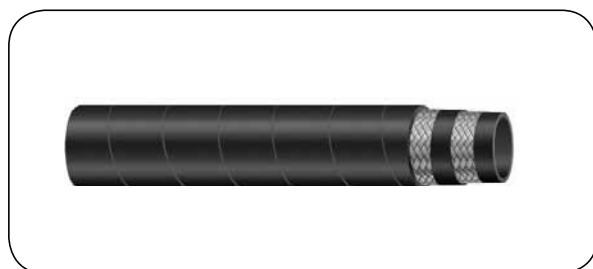
**Assembly:** Use Z type fittings - non-skived (IT-21).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-1SC-06P	6.4	12.5	225	900	50	0.19
HW-1SC-08P	7.9	13.5	215	860	55	0.21
HW-1SC-10P	9.5	15.7	180	720	60	0.26
HW-1SC-13P	12.7	19	160	640	70	0.33
HW-1SC-16P	15.9	22.4	130	520	90	0.41
HW-1SC-19P	19	25.8	105	420	100	0.52
HW-1SC-25P	25.4	33.5	90	360	160	0.73



## HIGH PRESSURE - hoses

### Hydraulic rubber hoses



#### HW-2SN

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Two steel wire braids  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C  
 (with peaks up to +125°C)

**Characteristics:** General purpose hydraulic hose.

**Standards:** EN 853-2SN, ISO 1436-1 2SN/R2AT, SAE100 R2AT.

**Assembly:** Use Z and S type fittings - non-skived (IT-5, IT-37).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-2SN-05	4.8	13.4	415	1650	90	0.31
HW-2SN-06	6.4	14.9	400	1600	100	0.37
HW-2SN-08	8	16.5	350	1400	115	0.41
HW-2SN-10	9.5	18.9	330	1320	130	0.51
HW-2SN-13	12.7	22	275	1100	180	0.63
HW-2SN-16	16	25.2	250	1000	200	0.76
HW-2SN-19	19	29.1	215	850	240	0.96
HW-2SN-25	25.4	37.7	165	650	300	1.39
HW-2SN-32	31.8	47.8	125	500	420	1.99
HW-2SN-38	38.1	54.1	90	360	500	2.35
HW-2SN-51	50.8	66.9	80	320	630	3.08



#### PERFORMER 2SN

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Two steel wire braids  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C  
 (with peaks up to +120°C)

**Characteristics:** General purpose hydraulic hose with service life exceeding the standard.

Service life: 400,000 impulse cycles min.

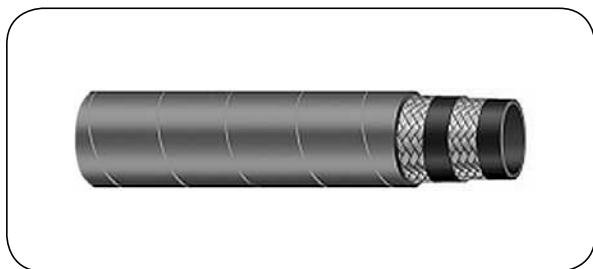
**Standards:** EN 853-2SN, ISO 1436-2SN, SAE 100R2S-AT.

**Assembly:** Use Z and S type fittings - non-skived (IT-5, IT-37).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-2SN-05P	4.8	12.8	450	1800	90	0.30
HW-2SN-06P	6.4	14.9	400	1600	100	0.40
HW-2SN-08P	7.9	16.7	350	1400	115	0.46
HW-2SN-10P	9.5	19.1	330	1320	125	0.55
HW-2SN-13P	12.7	22.1	275	1100	180	0.64
HW-2SN-16P	15.9	25.3	250	1000	205	0.78
HW-2SN-19P	19	29.6	215	860	240	0.97
HW-2SN-25P	25.4	37.7	165	660	300	1.42
HW-2SN-32P	31.8	47.7	125	500	420	2.12
HW-2SN-38P	38.1	54	90	360	500	2.55
HW-2SN-51P	50.8	67.5	80	320	630	3.20

## HIGH PRESSURE - hoses

### Hydraulic rubber hoses (high temperature version)



#### ULTIMATE 2SN/HT

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Two steel wire braids  
**External layer:** Blue synthetic rubber  
**Working temp.:** From -50°C up to +135°C  
 (with peaks up to +150°C)

**Characteristics:** Hydraulic hose with wider working temperature range than required by the standard.

**Standards:** EN 853-2SN, ISO 1436-2SN, SAE 100R2-AT.

**Assembly:** Use Z and S type fittings - non-skived (IT-5, IT-37).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-2SN-HT-06S	6.4	15	400	1600	100	0.40
HW-2SN-HT-08S	8	16.5	350	1400	115	0.47
HW-2SN-HT-10S	9.5	18.9	330	1320	130	0.58
HW-2SN-HT-13S	12.7	22.2	275	1100	180	0.68
HW-2SN-HT-16S	16	25.2	250	1000	205	0.80
HW-2SN-HT-19S	19	29.2	215	850	240	0.99
HW-2SN-HT-25S	25.4	37.2	165	650	300	1.38
HW-2SN-HT-32S	31.8	47.3	125	500	420	2.04
HW-2SN-HT-38S	38.1	53.7	90	360	500	2.28
HW-2SN-HT-51S	50.8	66.7	78	310	630	2.97



#### THERMAL 2SN/HT

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Two steel wire braids  
**External layer:** Blue synthetic rubber  
**Working temp.:** From -40°C up to +135°C  
 (with peaks up to +150°C)

**Characteristics:** Hydraulic hose with wider working temperature range than required by the standard. Service life: 400,000 impulse cycles min.

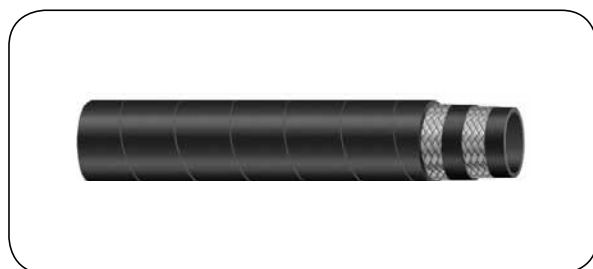
**Standards:** EN 853-2SN, ISO 1436-2SN, SAE 100R2S-AT.

**Assembly:** Use Z and S type fittings - non-skived (IT-5, IT-37).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-2SN-HT-06P	6.4	14.9	400	1600	100	0.41
HW-2SN-HT-08P	7.9	16.7	350	1400	115	0.48
HW-2SN-HT-10P	9.5	19.1	330	1320	125	0.56
HW-2SN-HT-13P	12.7	22.1	275	1100	180	0.65
HW-2SN-HT-16P	15.9	25.3	250	1000	205	0.79
HW-2SN-HT-19P	19	29.6	215	860	240	0.99
HW-2SN-HT-25P	25.4	37.7	165	660	300	1.44
HW-2SN-HT-32P	31.8	47.7	125	500	420	2.14
HW-2SN-HT-38P	38.1	54	90	360	500	2.58
HW-2SN-HT-51P	50.8	67.5	80	320	630	3.24

## HIGH PRESSURE - hoses

### Hydraulic rubber hoses (compact version)



#### HW-2SC

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Two steel wire braids  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C  
 (with peaks up to +125°C)

**Characteristics:** General purpose hydraulic hose with reduced outside diameter and weight and thus increased flexibility.

**Standards:** EN 857-2SC, SAE 100R16, SAE 100R2AT.

**Assembly:** Use Z type fittings - non-skived (IT-22).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-2SC-06	6.4	13.4	400	1600	75	0.30
HW-2SC-08	8	15	350	1400	85	0.35
HW-2SC-10	9.5	17.4	330	1320	90	0.42
HW-2SC-13	12.7	20.6	275	1100	130	0.54
HW-2SC-16	16	23.7	250	1000	170	0.63
HW-2SC-19	19	27.7	215	860	200	0.80
HW-2SC-25	25.4	35.6	165	660	250	1.17



#### PROKOMP 2SC

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Two steel wire braids  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C  
 (with peaks up to +120°C)

**Characteristics:** General purpose hydraulic hose with reduced outside diameter and weight and thus increased flexibility (COMPACT type). Service life: 400,000 impulse cycles.

**Standards:** EN 857-2SC, SAE 100R16, ISO 11237-1.

**Assembly:** Use Z type fittings - non-skived (IT-22).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-2SC-06P	6.4	13.5	400	1600	50	0.31
HW-2SC-08P	7.9	15	350	1400	55	0.35
HW-2SC-10P	9.5	17.1	330	1320	65	0.42
HW-2SC-13P	12.7	20.5	275	1100	80	0.52
HW-2SC-16P	15.9	23.5	250	1000	90	0.62
HW-2SC-19P	19	27.5	215	860	120	0.86
HW-2SC-25P	25.4	35.5	165	660	150	1.11

## HIGH PRESSURE - hoses

### Hydraulic rubber hoses (compact version)



#### BASTION 2SC

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Two steel wire braids  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C  
 (with peaks up to +125°C)

**Characteristics:** General purpose hydraulic hose with reduced outside diameter and weight and thus increased flexibility (COMPACT type). Designed for heavy duty applications. Superior resistance to impulse pressure. The external layer, made of special rubber compound, is antistatic, highly resistant to flame (exceeds MSHA requirements), ozone, weather, abrasion and UV radiation. Certified by MSHA.

**Standards:** Exceeds EN 857-2SC, SAE 100R 16S, ISO 11237-1.  
**Assembly:** Contact Technical Department of TUBES INTERNATIONAL®.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-2SC-BN-06P	6.4	12.8	400	1850	45	0.26
HW-2SC-BN-08P	7.9	15	350	1700	55	0.32
HW-2SC-BN-10P	9.5	16.6	330	1500	65	0.39
HW-2SC-BN-13P	12.7	20.1	275	1220	80	0.50
HW-2SC-BN-16P	15.9	23.5	250	1050	90	0.64
HW-2SC-BN-19P	19	27.6	245	980	120	0.80
HW-2SC-BN-25P	25.4	35.4	210	840	150	1.14



#### BRUTE/K 2SC

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Two steel wire braids  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C  
 (with peaks up to +120°C)

**Characteristics:** General purpose hydraulic hose with reduced outside diameter and weight and thus increased flexibility (COMPACT type). Higher working pressure compared to standard 2SC hydraulic hoses. Service life: 300,000 impulse cycles

**Standards:** Exceeds EN 857-2SC.  
**Assembly:** Contact Technical Department of TUBES INTERNATIONAL®.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-2SC-BE-K-06P	6.4	13.5	450	1800	50	0.31
HW-2SC-BE-K-08P	7.9	15.7	420	1680	65	0.36
HW-2SC-BE-K-10P	9.5	17.1	380	1520	80	0.44
HW-2SC-BE-K-13P	12.7	20.9	325	1300	90	0.55
HW-2SC-BE-K-16P	15.9	25.1	290	1160	120	0.60
HW-2SC-BE-K-19P	19	27.9	280	1120	120	0.86

## HIGH PRESSURE - hoses

### Hydraulic rubber hoses (multispiral)



#### HW-4SP

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Four steel wire spirals  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C  
 (with peaks up to +125°C)

**Characteristics:** General purpose hydraulic hose.

**Standards:** EN 856 4SP, ISO 3862-1 4SP.

**Assembly:** Use Z type fittings, M and Z type ferrules - external skiving (IT-9, IT-31).  
 Acceptable use of N type fittings - non-skived (IT-82).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-4SP-06	6.4	17.8	450	1800	150	0.62
HW-4SP-10	9.5	21.4	445	1780	180	0.85
HW-4SP-13	12.7	24.6	415	1660	230	0.93
HW-4SP-16	16	28.5	350	1400	250	1.15
HW-4SP-19	19	32.1	350	1400	300	1.55
HW-4SP-25	25.4	39.7	280	1120	340	2.03
HW-4SP-32	31.8	50.8	210	840	460	3.17
HW-4SP-38	38.1	57.1	185	760	560	3.66
HW-4SP-51	50.8	70.6	165	660	660	5.14



#### HI-PULSE 4SP

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Four steel wire spirals  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C  
 (with peaks up to +120°C)

**Characteristics:** General purpose hydraulic hose. Service life longer than required by the standard: 1,000,000 impulse cycles. The external layer is flame resistant, MSHA approved.

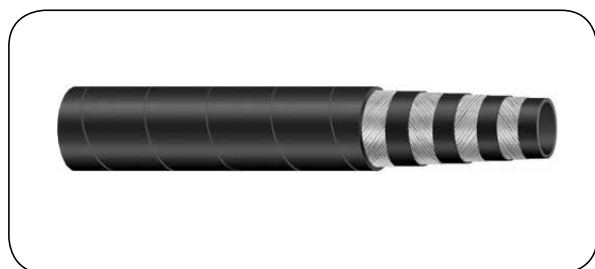
**Standards:** EN 856 4SP, ISO 3862-1 4SP.

**Assembly:** Use Z type fittings, M and Z type ferrules - external skiving (IT-9, IT-31).  
 Acceptable use of N type fittings - non-skived.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-4SP-10P	9.5	21.4	460	1840	180	0.75
HW-4SP-13P	12.7	24	430	1720	230	0.90
HW-4SP-16P	15.9	27.6	350	1400	250	1.09
HW-4SP-19P	19	32.1	350	1400	300	1.51
HW-4SP-25P	25.4	38.7	320	1280	340	2.09
HW-4SP-32P	31.8	49.8	210	840	460	3.10
HW-4SP-38P	38.1	57.3	190	760	560	3.61
HW-4SP-51P	50.8	71.1	180	720	660	5.03

## HIGH PRESSURE - hoses

### Hydraulic rubber hoses (multispiral)



#### HW-4SH

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Four steel wire spirals  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C  
 (with peaks up to +125°C)

**Characteristics:** General purpose hydraulic hose.

**Standards:** EN 856 4SH, ISO 3862-1 4SH.

**Assembly:** Use IL type fittings - external and internal skiving (IT-34).  
 Acceptable use of Z type fittings and M type ferrules - external skiving (IT-11).  
 Acceptable use of N type fittings - non-skived (IT-82).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-4SH-19	19	32.2	420	1680	280	1.55
HW-4SH-25	25.4	38.7	380	1520	340	2.09
HW-4SH-32	31.8	45.5	325	1300	460	2.57
HW-4SH-38	38.1	53.5	290	1160	560	3.44
HW-4SH-51	50.8	68.1	250	1000	700	4.90



#### HI-PULSE 4SH

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Four steel wire spirals  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C  
 (with peaks up to +120°C)

**Characteristics:** General purpose hydraulic hose. Service life longer than required by the standard: 1,000,000 impulse cycles. The external layer is flame resistant, MSHA approved.

**Standards:** EN 856 4SH, ISO 3862-1 4SH.

**Assembly:** Use IL type fittings - external and internal skiving (IT-34).  
 Acceptable use of N type fittings - non-skived (IT-82).  
 Acceptable use of Z type fittings and M type ferrules - external skiving (IT-11).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-4SH-19P	19	32.1	420	1680	280	1.51
HW-4SH-25P	25.4	38.7	390	1560	340	2.09
HW-4SH-32P	31.8	45.5	350	1400	460	3.10
HW-4SH-38P	38.1	52.5	290	1160	560	3.61
HW-4SH-51P	50.8	67.5	250	1000	700	5.03

## HIGH PRESSURE - hoses

### Hydraulic rubber hoses (multispiral)



#### IMPETUS R13

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Four steel wire spirals (six for DN32 ÷ DN51)  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +121°C (with peaks up to +125°C)

**Characteristics:** General purpose hydraulic hose. Service life longer than required by the standard: 1,000,000 impulse cycles. The external layer is flame resistant, MSHA approved.

**Standards:** EN 856 R13, ISO 3862-1 R13, SAE 100R13.

**Assembly:** Use IL type fittings - external and internal skiving (IT-51).  
 Acceptable use of N type fittings - non-skived (IT-82).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-R13-19P	19	32.1	350	1400	240	1.51
HW-R13-25P	25.4	38.7	350	1400	300	2.11
HW-R13-32P	31.8	49.8	350	1400	420	3.58
HW-R13-38P	38.1	57.3	350	1400	500	4.91
HW-R13-51P	50.8	71.1	350	1400	600	6.89



#### HW-R13-XFGT

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Four steel wire spirals (six for DN32 ÷ DN51)  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +121°C (with peaks up to +125°C)

**Characteristics:** General purpose hydraulic hose with increased flexibility (50% better bending radius than stated by the standard). Service life longer than required by the standard, approved at 1.000.000 impulse cycles. The external layer is flame resistant (MSHA).

**Standards:** EN 856 R13, ISO 3862-1 R13, SAE 100R13.

**Assembly:** Use IL type fittings - external and internal skiving (IT-51).  
 Acceptable use of N type fittings - non-skived (IT-82).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-R13-XFGT-19	19	30.1	380	1520	120	1.20
HW-R13-XFGT 25	25.4	37.4	350	1400	150	1.80
HW-R13-XFGT 32	31.8	44.8	350	1400	280	2.40
HW-R13-XFGT 38	38.1	57.3	350	1400	300	4.60

## HIGH PRESSURE - hoses

### Hydraulic rubber hoses with increased parameters



#### IMPETUS R15

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Four steel wire spirals  
 (six for DN32 ÷ DN51)  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +121°C  
 (with peaks up to +125°C)

**Characteristics:** General purpose hydraulic hose. 1,000,000 impulse cycles. The external layer is flame resistant, MSHA approved. Service life longer than required by the standard,

**Standards:** EN 856 R15, ISO 3862-1 R15, SAE 100R15.

**Assembly:** Use IL type fittings - external and internal skiving (IT-52).  
 Acceptable use of N type fittings - non-skived (IT-82).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-R15-19P	19	32	420	1680	270	1.56
HW-R15-25P	25.4	39	420	1680	300	2.04
HW-R15-32P	31.8	50	420	1680	420	3.63
HW-R15-38P	38.1	58	420	1680	500	4.81
HW-R15-51P	50.8	72	420	1680	600	6.94



#### HW-R15-XFGT

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Four steel wire spirals  
 (six for DN32 ÷ DN51)  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +121°C  
 (with peaks up to +125°C)

**Characteristics:** General purpose hydraulic hose with increased flexibility (50% better bending radius than stated by the standard). Service life longer than required by the standard, approved at 1.000.000 impulse cycles. The external layer is flame resistant (MSHA).

**Standards:** EN 856 R15, ISO 3862-1 R15, SAE 100R15.

**Assembly:** Use IL type fittings - external and internal skiving (IT-52).  
 Acceptable use of N type fittings - non-skived (IT-82).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-R15-XFGT-19	19	30.6	420	1680	120	1.50
HW-R15-XFGT-25	25.4	37.8	420	1680	165	2.00
HW-R15-XFGT-32	31.8	49.3	420	1680	300	3.55
HW-R15-XFGT-38	38.1	57.0	420	1680	350	4.65



### Hydraulic rubber hoses (mining)

Hydraulic rubber hoses designed for mine application must meet safety standards regarding the risk of dust explosion or fire (methane, coal dust explosion) in underground coal mines.

Hoses designed for mining should be sufficiently:

- anti-electrostatic (prevention of explosion and ignition)
- fire-resistant (prevention of ignition, explosion and spreading of fire)
- non-toxic thermal decomposition products

Apart from the above safety issues, there may also be a requirement for the increased abrasion resistance of the external rubber layer.

There are institutions in each country that confirm, through certificates, approvals and permits, the fulfilment of safety requirements for mining. Among others, the certificates given by or according to:

- WUG, KOMAG and other accredited units (Poland),
- DSK (LOBA) (Germany),
- MakNII (Ukraine),
- GOST-R (Russia),
- MSHA - Mine Safety and Health Administration (USA),
- FRAS - Fire Resistant Anti Static, Flame Retardant Anti Static (Australia).

The requirements for hoses used in mining are dissimilar in different countries as they refer to distinct standards, methods and tests criteria, e.g. fire resistance. The requirements of Polish mining supervision are the most stringent. The hoses approved for mine application are usually permanently marked with: name of an institution (standard) and approval (certificate) number that allows the use of the hose for a particular purpose.

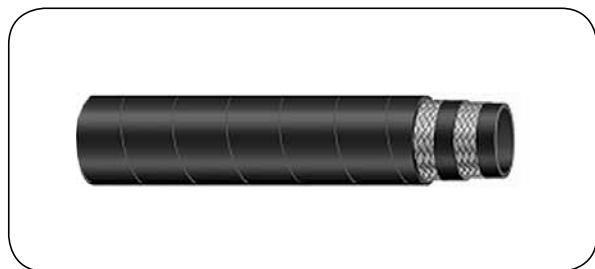


We assemble and supply hydraulic hoses with STECKO fittings approved for use in mines and zones with the potential hazard of methane and/or coal dust explosion.

Attention! STECKO mining type fittings - see HIGH PRESSURE chapter, section - fittings.

## HIGH PRESSURE - hoses

### Hydraulic rubber hoses (mining)



#### HW-2ST/G

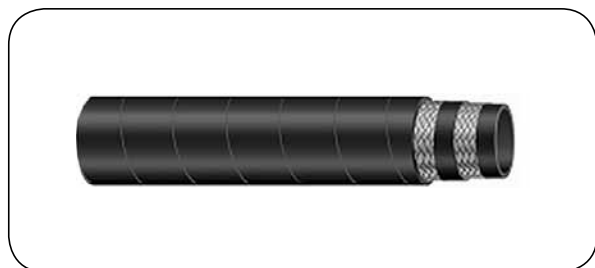
**Internal layer:** Black synthetic rubber  
**Reinforcement:** Two steel wire braids  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C  
 (with peaks up to +120°C)

**Characteristics:** Hydraulic hose with an enlarged outside diameter designed for application in the mining industry. The external layer is antistatic, non-toxic and flame resistant. The hose meets all safety requirements and thus is approved for use in potentially explosive atmospheres.

**Standards:** EN853-2ST.

**Assembly:** Contact Technical Department of TUBES INTERNATIONAL®.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-2ST-G-08	7.9	19.1	350	1400	115	0.48
HW-2ST-G-10	9.5	21.4	330	1320	130	0.64
HW-2ST-G-13	12.7	24.6	275	1100	180	0.72
HW-2ST-G-19	19	31.8	215	860	240	1.07
HW-2ST-G-25	25.4	39.7	165	660	300	1.56
HW-2ST-G-32	31.8	50.8	125	500	420	2.20



#### HW-2SN/G

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Two steel wire braids  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C  
 (with peaks up to +120°C)

**Characteristics:** Hydraulic hose designed for application in the mining industry. The external layer is antistatic, non-toxic and flame resistant. The hose meets all safety requirements and thus is approved for use in potentially explosive atmospheres.

**Standards:** EN853-2SN.

**Assembly:** Use Z and S type fittings - non-skived (IT-5, IT-37).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-2SN-G-06	6.4	14.7	400	1600	100	0.36
HW-2SN-G-08	7.9	16.3	350	1400	115	0.41
HW-2SN-G-10	9.5	18.7	330	1320	130	0.51
HW-2SN-G-13	12.7	21.8	275	1100	180	0.67
HW-2SN-G-16	15.9	25	250	1000	200	0.79
HW-2SN-G-19	19	29	215	860	240	1.01
HW-2SN-G-25	25.4	36.8	165	660	300	1.46
HW-2SN-G-32	31.8	47	125	500	420	2.04
HW-2SN-G-38	31.8	53.4	90	360	500	2.20

## HIGH PRESSURE - hoses

### Hydraulic rubber hoses (mining)



#### HW-4SP/G

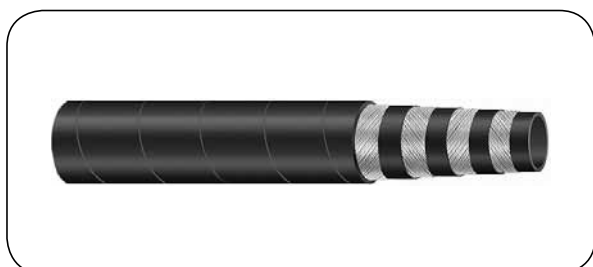
**Internal layer:** Black synthetic rubber  
**Reinforcement:** Four steel wire spirals  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C  
 (with peaks up to +120°C)

**Characteristics:** Hydraulic hose designed for application in the mining industry. The external layer is antistatic, non-toxic and flame resistant. The hose meets all safety requirements and thus is approved for use in potentially explosive atmospheres.

**Standards:** EN856 4 SP, ISO 3862-1 4SP.

**Assembly:** Use Z type fittings, M and Z type ferrules - external skiving (IT-9, IT-31).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-4SP-G-06	6.4	17.8	450	1800	150	0.64
HW-4SP-G-10	9.5	21.4	445	1780	180	0.68
HW-4SP-G-13	12.7	24.6	415	1660	230	0.88
HW-4SP-G-16	16	28.5	350	1400	250	1.15
HW-4SP-G-19	19	32.1	350	1400	300	1.55
HW-4SP-G-25	25.4	39.7	280	1120	340	2.06
HW-4SP-G-32	31.8	50.8	210	840	460	3.11



#### HW-4SH/G

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Four steel wire spirals  
**External layer:** Black synthetic rubber  
**Working temp.:** From -40°C up to +100°C  
 (with peaks up to +120°C)

**Characteristics:** Hydraulic hose designed for application in the mining industry. The external layer is antistatic, non-toxic and flame resistant. The hose meets all safety requirements and thus is approved for use in potentially explosive atmospheres.

**Standards:** EN856 4 SH, ISO 3862-1 4SH.

**Assembly:** Use IL type fittings - external and internal skiving (IT-34).  
 Acceptable use of N type fittings - non-skived (IT-82).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-4SH-G-19	19	32.2	420	1680	280	1.56
HW-4SH-G-25	25.4	38.7	380	1520	340	2.08
HW-4SH-G-32	31.8	45.5	350	1400	460	2.51

## Thermoplastic hoses

Thermoplastic hoses - medium and high pressure hoses made of thermoplastic polymers (most often of polyester, polyamide, polyurethane) with one or two textile or steel wire braids as reinforcement.

Features of thermoplastic hose:

- very low weight (even up to 60% lighter than rubber hoses),
- compact structure (small outside diameter in proportion to the internal one),
- small bending radius,
- good chemical resistance of the internal layer to hydraulic oil and chemicals,
- very smooth internal layer hardly affects flow rate,
- resistant to ageing, ozone and ultraviolet radiation.

The external layer is usually made of abrasion resistant polyurethane.

When the material of the internal layer is considered, general purpose thermoplastic hoses can be divided into the following:

material	main application	other application
polyester	hydraulic oil	air, gases, fuel, water-based fluids, chemicals
polyamide	solvent, paint	water-based fluids, isocyanate, polyol, air, gases, hydraulic oil

It is recommended to confirm the application of a hose for a particular medium with Technical Department of TUBES INTERNATIONAL®.

### Standards:

Some types of thermoplastic hoses are standardized. Standards usually applied: SAE J517 (specifies SAE 100R7 and SAE 100R8 hoses), DIN 24951, ISO 3949 and EN 855. These standards define two types of hoses: with two textile braids (R7) and with two aramid fibre braids (R8).

### Application:

- oil hydraulics,
- painting (airless paint sprayers),
- compressed air and gases,
- chemicals,
- water blasting.

### Pinpricking of the external layer:

Over longer operation time gas particles start to penetrate the hose wall causing blisters or bubbles. Pinpricks - small holes in the external layer of the hose prevent this process. It is particularly recommended to pinprick the hoses for high pressure gas transfer and the area next to the fittings. Pinpricking is factory-made or when complete hose assemblies are made.

### Static electricity:

If it is necessary for particular application to convey electrical charges away from the hose (hoses for paint, organic solvents, hoses with high flow rates), the choice of the hose with a metal braid or additional conductor (conductive fibre in a braid, etc.) is recommended. The fittings must be mounted in such a way so as to obtain electrical continuity of the assembly.

### Twin and multiple hoses:

A twin version of thermoplastic hoses (two hoses with external layers welded together) is frequently used in fork-lift trucks, hydraulic installations of machine tools or process lines and in many other applications. A multiple hose version (three or four pieces, etc.) is available on request.

### Assembly:

The thermoplastic hoses require Z type fittings for high pressure hoses (crimped with crimping machine). In some cases reusable S type fittings can be used. Ultra high pressure hoses (about 700 bar) should be crimped with special kind of fittings (see HIGH PRESSURE chapter - UHP equipment section).

# HIGH PRESSURE - hoses

## Table for initial thermoplastic hose selection

for hydraulic oil installations, gases, air, fuels,  
water - based fluids (internal layer - polyester)

max. working pressure [bar]	nominal diameter DN [mm, inch]										
	3	4	5	6	8	10	13	16	19	25	32
	1/8"	5/32"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"
700÷800	see "HIGH PRESSURE chapter - UHP accessories" section										
450÷500			FK0100	FK0100							
400÷450	OL8 R8		120ACF	120ACF	FK0100	FK0100 MTKH					
350÷400		F0220	F0220	F0220			MTKH				
300÷350			OL8 R8 FM040 MTH1	OL8 R8 140BD	OL8 R8 F0220	OL8M	OL8M FK0100		OL8M		
250÷300			050CO2	FM040 MTH1 050CO2 140BD		OL8 R8 F0220					
200÷250	OL7	OL5 OL7 R7 F0200	FP17010 OL7 R7 F0200 OL7M R18CPLT FP17051	R7 F0200 OL7M R18CPLT FP17051 140BD	OL7M R18CPLT FM040 MTH1 050CO2	OL7M R18CPLT FM040 MTH1 050CO2	OL7M R18CPLT OL8 R8 F0220	R18CPLT FK0100	MTKH	OL8M	OL8M
150÷200	OL5	OL5	OL5	FP17010 OL7	FP17010 OL7 R7 F0200 FP17051	FP17010 OL7 R7 F0200 FP17051	F0200 FM040 MTH1 FP17051 050CO2	OL8 R8 F0220	OL8 R8 F0220 FK0100	FK0100 MTKH	
100÷150			F0080	F0080 OL5	F0080 OL5	F0080 OL5	F0080 OL7 R7	OL7 R7 F0200 FM040 MTH1 050CO2	F0200 FM040 MTH1	OL8 R8 F0220 MTH1	
50÷100							OL5		OL7 R7	OL7 R7 F0200 FM040	MTH1

The maximum working pressure of a particular hose type (the one given in the catalogue) is in a pressure range in the table above. When selecting a hose for the particular diameter and maximum working pressure it is recommended to read out a suitable hose type, find the precise maximum working pressure in the hose description and consider all additional factors such as: medium, temperature, bending radius, vibrations and dynamic bending, electrical conductivity or antistatic properties, pinpricking of the external layer (for gases and air) and external working conditions of the hose.

## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyester



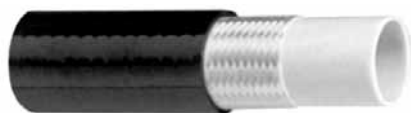
#### F 0080

**Internal layer:** Polyester  
**Reinforcement:** Polyester braid  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -40°C up to +93°C  
 (for water and air up to +65°C)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, gases, air, fuels, water-based fluids.

**Assembly:** Use Z type fittings (IT-61).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
MC-F0080B-05	5	8.3	130	520	30	4.20
MC-F0080C-06	6.6	11.4	130	520	40	8.30
MC-F0080D-08	8	13.4	120	480	50	11.00
MC-F0080E-10	9.7	15.5	120	480	60	13.50
MC-F0080F-13	13	19.2	110	440	90	19.00



#### OL 5

**Internal layer:** Polyester  
**Reinforcement:** Polyester braid  
**External layer:** Polyurethane  
**Working temp.:** From -40°C up to +100°C  
 (for water and air up to +70°C)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, fuels, water-based fluids. A pinpricked version is available on request (for gases and air).

**Assembly:** Use Z type fittings (IT-60).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-OL5-03	3.5	7.5	200	800	25	3.70
ZC-OL5-04	4	8	200	800	30	4.50
ZC-OL5-04X8,3	4	8.3	210	840	30	4.80
ZC-OL5-04X8,6	4	8.6	210	840	30	4.80
ZC-OL5-05	4.8	9.2	200	800	30	5.90
ZC-OL5-06	6.4	10.8	145	580	45	7.00
ZC-OL5-08	8	13	120	480	50	8.70
ZC-OL5-10	9.7	14.8	115	460	55	11.40
ZC-OL5-13	13	18.7	80	320	90	16.90

## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyester



#### FP 17010 / FP 27010

**Internal layer:** Polyester  
**Reinforcement:** Two polyester braids  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -40°C up to +93°C  
 (for water and air up to +65°C)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, gases, air, fuels and water-based fluids.

**Standards:** SAE 100R7, ISO 3949-R7.

**Assembly:** Use Z type fittings (IT-62).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
MC-FP17010B-05	5	9.3	207	830	30	5.70
MC-FP17010C-06*	6.6	11.8	190	760	40	9.00
MC-FP17010D-08*	8	14.2	172	690	50	12.90
MC-FP17010E-10*	9.7	16	155	620	70	15.00

\* - a twin version available, code example: MC-FP27010C-06



#### OL 7 / OLB 7

**Internal layer:** Polyester  
**Reinforcement:** Two polyester braids  
**External layer:** Polyurethane  
**Working temp.:** From -40°C up to +100°C  
 (for water and air up to +70°C)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, fuels, water-based fluids. A pinpricked version is available on request (for gases and air).

**Standards:** SAE 100R7, EN 855-R7, ISO 3949-R7.

**Assembly:** Use Z type fittings (IT-59).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-OL7-03	3.5	8.5	230	920	25	5.70
ZC-OL7-04	4	8.9	250	1000	25	5.80
ZC-OL7-05*	4.8	10	210	840	30	7.30
ZC-OL7-06*	6.4	11.8	200	800	35	9.00
ZC-OL7M-06	6.4	12.7	250	1000	40	10.70
ZC-OL7-08*	8	14.3	190	760	45	12.80
ZC-OL7M-08	8	15	250	1000	50	15.00
ZC-OL7-10*	9.7	16	175	700	55	15.50
ZC-OL7M-10	9.5	18	250	1000	50	20.50
ZC-OL7-13*	13	20.3	140	560	75	21.90
ZC-OL7M-13	13	22.8	210	840	70	31.30
ZC-OL7-16	16	23.5	105	420	120	27.70
ZC-OL7-19	19.2	26.5	90	360	145	33.00
ZC-OL7-25	25.6	32.5	70	280	200	40.30

\* - twin version available, code example: ZC-OLB7-05

## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyester



#### R7 ANTIABRASION

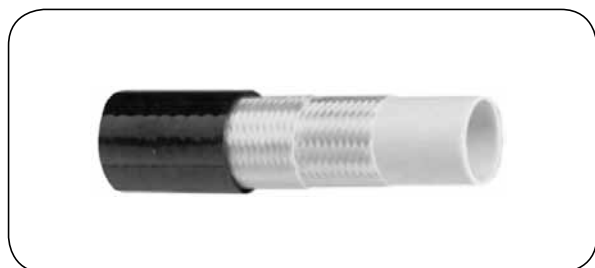
**Internal layer:** Polyester  
**Reinforcement:** One or two polyester braids  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -40°C up to +100°C  
 (for water and air up to +70°C)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, gases, air, fuels, water-based fluids.

**Standards:** SAE 100R7, ISO 3949-R7.

**Assembly:** Use Z type fittings (IT-87).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
TO-R7-04	4	8.3	210	840	25	4.50
TO-R7-05	5	9.6	210	840	25	6.00
TO-R7-06	6.5	12.2	210	840	35	10.00
TO-R7-08	8.1	14.3	190	760	45	13.00
TO-R7-10	9.7	16	160	640	55	14.50
TO-R7-13	13	20.3	140	560	75	22.00
TO-R7-16	16.3	23.7	105	420	110	28.00
TO-R7-19	19.5	27.1	90	360	140	33.50
TO-R7-25	25.9	34	70	280	190	45.50



#### F 0200 / F 2200

**Internal layer:** Polyester  
**Reinforcement:** Two polyester braids  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -40°C up to +93°C  
 (for water and air up to +65°C)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, gases, air, fuels and water-based fluids.

**Standards:** DIN 24951, SAE 100R7, ISO 3949-R7.

**Assembly:** Use Z type fittings (IT-63).

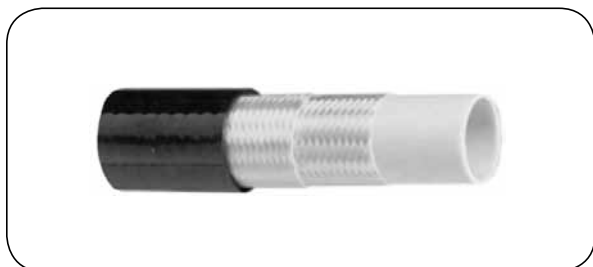
code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
MC-F0200A-04	4	8.3	235	950	20	4.90
MC-F0200B-05	5	9.3	220	880	26	6.30
MC-F0200C-06*	6.6	12.5	215	860	30	10.60
MC-F0200D-08*	8	14.3	195	780	40	13.00
MC-F0200E-10*	9.7	16.5	187	750	70	16.60
MC-F0200F-13*	13	20.5	157	630	90	23.00
MC-F0200G-16	16.4	24	130	520	130	27.60
MC-F0200H-19	19.5	27.5	105	420	150	34.20
MC-F0200I-26	26	34.2	77	310	180	43.30

\* - twin version available, code example: MC-F2200C-06.



## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyester



#### OL 7M

**Internal layer:** Polyester  
**Reinforcement:** Two polyester braids  
**External layer:** Polyurethane  
**Working temp.:** From -40°C up to +100°C  
 (for water and air up to +70°C)

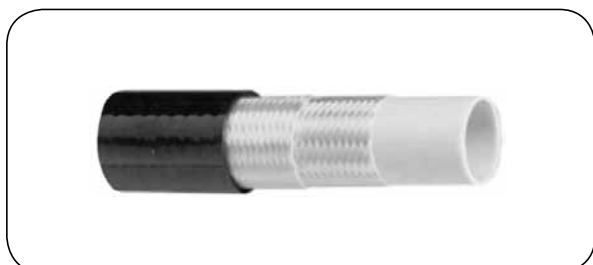
**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, gases, air, fuels and water-based fluids. A pinpricked version is available on request (for gases and air).

**Standards:** AE 100R18, ISO 3949-R18.

**Assembly:** Use Z type fittings.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-OL7M-05	4.8	10.5	250	1000	30	8.20
ZC-OL7M-06	6.4	12.7	250	1000	40	10.70
ZC-OL7M-08	8	15	250	1000	50	15.00
ZC-OL7M-10	9.5	18	250	1000	50	20.50
ZC-OL7M-13	13	22.8	210	840	70	31.30

\* - twin version available, code example: ZC-OLB7-05



#### R18 CPLT

**Internal layer:** Polyester  
**Reinforcement:** One or two polyester braids  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -55°C up to +100°C  
 (for water and air up to +70°C)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, gases, air, fuels, water-based fluids. Resistant to very low temperatures.

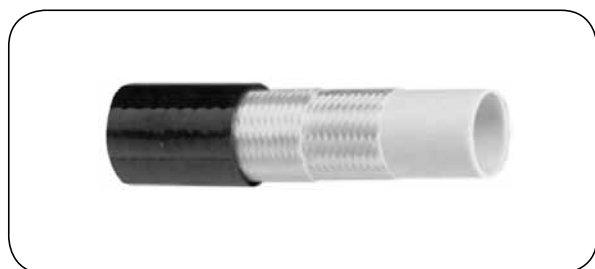
**Standards:** SAE 100R18, ISO 3949-R18.

**Assembly:** Use Z type fittings (IT-106).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
TO-R18CPLT-05	5	9.6	210	840	25	6.00
TO-R18CPLT-06	6.5	12.2	210	840	35	9.50
TO-R18CPLT-08	8.1	14.3	210	840	45	13.00
TO-R18CPLT-10	9.7	16.6	210	840	45	16.50
TO-R18CPLT-13	13	22.5	210	840	70	29.50
TO-R18CPLT-16	16.3	26.1	210	840	100	37.00

## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyester



#### OL 8 / OLB 8

**Internal layer:** Polyester  
**Reinforcement:** Two aramid fibre braids  
**External layer:** Polyurethane  
**Working temp.:** From -40°C up to +100°C  
 (for water and air up to +70°C)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, fuels and water-based fluids.  
 A pinpricked version is available on request (for gases and air).

**Standards:** SAE 100R8, ISO 3949-R8.

**Assembly:** Use Z type fittings (IT-65).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-OL8-03	3.5	7.1	420	1680	30	3.70
ZC-OL8-05*	4.8	10	350	1400	35	7.20
ZC-OL8-06*	6.4	11.8	350	1400	50	8.50
ZC-OL8-08*	8	14.3	325	1300	60	12.60
ZC-OL8-10*	9.7	16	280	1120	70	14.60
ZC-OL8-13*	13	20.3	245	980	95	22.50
ZC-OL8-16	16	23.5	195	780	125	26.50
ZC-OL8-19	19.2	26.5	165	660	150	35.20
ZC-OL8-25	25.6	34.7	145	580	200	50.50

\* - twin version available, code example: ZC-OLB8-06.



#### F 0220 / F 2220

**Internal layer:** Polyester  
**Reinforcement:** One or two aramid fibre braids  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -40°C up to +93°C  
 (for water and air up to +65°C)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, gases, air, fuels and water-based fluids.

**Standards:** SAE 100R8, ISO 3949-R8.

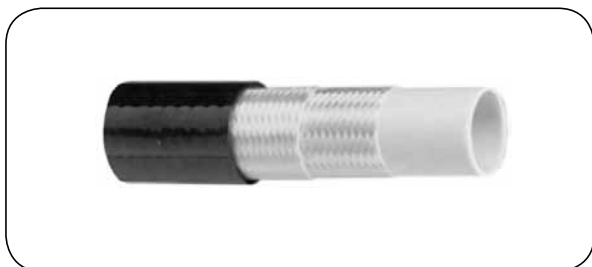
**Assembly:** Use Z type fittings (IT-64).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
MC-F0220A-04	4	8.3	362	1450	15	5.00
MC-F0220B-05	5	9.3	362	1450	22	6.30
MC-F0220C-06*	6.6	12.5	362	1450	30	10.50
MC-F0220D-08*	8	14.3	350	1400	40	12.60
MC-F0220E-10*	9.7	16.5	300	1200	70	14.80
MC-F0220F-13*	13	20.5	250	1000	90	22.70
MC-F0220G-16	16.4	24	200	800	130	27.70
MC-F0220H-19	19.5	27.5	162	650	150	34.00
MC-F0220I-26	26	34.2	140	560	190	42.50

\* - twin version available, code example: MC-F2220C-06.

## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyester



#### OL 8M

**Internal layer:** Polyester  
**Reinforcement:** Two aramid fibre braids  
**External layer:** Polyurethane  
**Working temp.:** From -40°C up to +100°C  
 (for water and air up to +70°C)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, fuels and water-based fluids. A pinpricked version is available on request (for gases and air).

**Standards:** SAE 100R8, ISO 3949-R8.

**Assembly:** Contact Technical Department of TUBES INTERNATIONAL®.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-OL8M-10	9.7	16	350	1400	80	14.90
ZC-OL8M-13	13	22	350	1400	100	28.50
ZC-OL8M-19	19.2	29	345	1380	205	41.40
ZC-OL8M-25	25.8	35	250	1000	230	49.30
ZC-OL8M-32	32	45	250	1000	350	85.50



#### FM 040 / FM 240

**Internal layer:** Polyester  
**Reinforcement:** One steel wire braid  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -40°C up to +93°C  
 (for water and air up to +65°C)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, gases, air, fuels and water-based fluids.

**Assembly:** Use Z type fittings (IT-67).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
MC-FM040B-05	5	9.3	330	1320	20	10.00
MC-FM040C-06*	6.6	12	300	1200	35	16.80
MC-FM040D-08*	8	13.5	215	860	40	19.00
MC-FM040E-10*	9.9	15.5	215	860	60	24.90
MC-FM040F-13*	13	19.5	180	720	70	31.40
MC-FM040G-16	16.4	23	145	580	110	40.10
MC-FM040H-19	19.5	26.5	120	480	150	48.50
MC-FM040I-26	26	34.2	97	390	170	68.90

\* - twin version available, code example: MC-FM240C-06.

## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyester



#### MTH 1 / MTBH 1

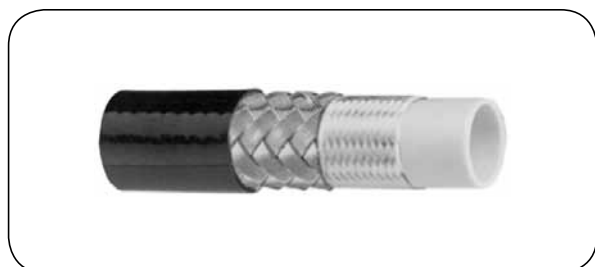
**Internal layer:** Polyester  
**Reinforcement:** One steel wire braid  
**External layer:** Polyurethane  
**Working temp.:** From -40°C up to +100°C  
 (for water and air up to +70°C)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, fuels and water-based fluids.  
 A pinpricked version is available on request (for gases and air).

**Assembly:** Use Z type fittings (IT-66).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-MTH1-05*	4.8	10	325	1300	30	13.30
ZC-MTH1-06*	6.4	11.9	300	1200	40	17.00
ZC-MTH1-08*	8	14	240	960	50	22.10
ZC-MTH1-10*	9.7	16	225	900	60	26.00
ZC-MTH1-13*	13	19.2	190	760	75	32.60
ZC-MTH1-16	16.3	23.3	150	600	110	41.20
ZC-MTH1-19	19.2	25.5	130	520	150	45.40
ZC-MTH1-25	25.6	32.5	105	420	185	59.00

\* - twin version available, code example: ZC-MTBH1-06.



#### FK 0100 / FK 2100

**Internal layer:** Polyester  
**Reinforcement:** One aramid fibre braid  
 + one steel wire braid  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -40°C up to +93°C  
 (for water and air up to +65°C)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, gases, air, fuels and water-based fluids.

**Assembly:** Use Z type fittings (IT-70).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
MC-FK0100B-05	5	11.2	500	2000	30	14.50
MC-FK0100C-06*	6.6	13.2	500	2000	40	19.60
MC-FK0100D-08*	8	15.2	450	1800	50	23.20
MC-FK0100E-10*	9.8	18.5	425	1700	80	34.20
MC-FK0100F-13*	13	21.5	350	1400	90	42.40
MC-FK0100G-16*	16.4	24.5	225	900	100	45.30
MC-FK0100H-19*	19.5	28	200	800	130	51.20
MC-FK0100I-26*	26	35	175	700	150	68.50

\* - twin version available, code example: MC-FK2100C-06.

## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyester



#### MTKH / MTBKH

**Internal layer:** Polyester  
**Reinforcement:** One aramid fibre braid  
+ one steel wire braid  
**External layer:** Polyurethane  
**Working temp.:** From -40°C up to +100°C  
(for water and air up to +70°C)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, fuels, water-based fluids. A pinpricked version is available on request (for gases and air).

**Assembly:** Use Z type fittings (IT-69).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-MTKH-10*	9.5	18	425	1700	60	34.40
ZC-MTKH-13*	13	22	375	1500	75	46.00
ZC-MTKH-19	19.2	28.2	225	900	150	65.90

\* - twin version available, code example: ZC-MTBKH-06.



#### OL 7 NON CONDUCTIVE

**Internal layer:** Polyester  
**Reinforcement:** Two polyester braids  
**External layer:** Orange polyurethane  
**Working temp.:** From -40°C up to +100°C  
(for water up to +70°C)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, fuels and water-based fluids. Used near electrical transformers, medium and high voltage installations. Non-conductive - a leakage current in test conditions according to the standard, lower than 50 µA at 246 kV/m voltage for 5 min.

**Standards:** ANSI 92.2, SAE 100R7, ISO 3949-R7.

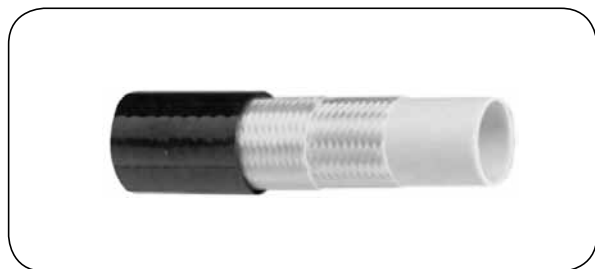
**Assembly:** Use Z type fittings (IT-59).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-OL7NC-03	3.5	8.5	230	920	25	5.70
ZC-OL7NC-04	4	8.9	250	1000	25	5.80
ZC-OL7NC-05	4.8	10	210	840	30	7.30
ZC-OL7NC-06	6.4	11.8	200	800	35	9.00
ZC-OL7NC-08	8	14.3	190	760	45	12.80
ZC-OL7NC-10	9.7	16	175	700	55	15.50
ZC-OL7NC-13	13	20.3	140	560	75	21.90
ZC-OL7NC-16	16	23.5	105	420	120	27.70
ZC-OL7NC-19	19.2	26.5	90	360	145	33.00
ZC-OL7NC-25	25.6	32.5	70	280	200	40.30

Other standard hoses are available in NON-CONDUCTIVE version as well.

## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyester



#### FP 17051 NON CONDUCTIVE

**Internal layer:** Polyester  
**Reinforcement:** Two polyester braids  
**External layer:** Orange polyurethane  
**Working temp.:** From -40°C up to +93°C  
 (for water up to +65°C)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, fuels and water-based fluids. Used near electrical transformers, medium and high voltage installations. Non-conductive - a leakage current in test conditions according to the standard, lower than 50 µA at 246 kV/m voltage for 5 min.

**Standards:** DIN 24951, SAE 100R7, ISO 3949-R7.

**Assembly:** Use Z type fittings (IT-63).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
MC-FP17051B-05	5	9.3	220	880	26	6.30
MC-FP17051C-06	6.6	12.5	215	860	30	10.60
MC-FP17051D-08	8	14.3	195	780	40	13.00
MC-FP17051E-10	9.7	16.5	187	750	70	16.60
MC-FP17051F-13	13	20.5	157	630	90	23.00



#### OL 8 NON CONDUCTIVE

**Internal layer:** Polyester  
**Reinforcement:** Two aramid braids  
**External layer:** Orange polyurethane  
**Working temp.:** From -40°C up to +93°C  
 (for water up to +70°C)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, fuels and water-based fluids. Used near electrical transformers, medium and high voltage installations. Non-conductive - a leakage current in test conditions according to the standard, lower than 50 µA at 246 kV/m voltage for 5 min.

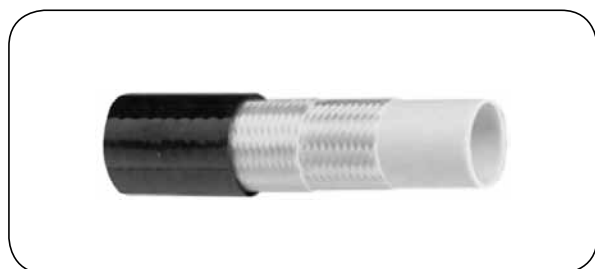
**Standards:** SAE 100R8, ISO 3949-R8.

**Assembly:** Use Z type fittings (IT-65).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-OL8NC-03	3.5	7.1	420	1680	30	3.70
ZC-OL8NC-04	4	8	420	1680	35	4.40
ZC-OL8NC-05	4.8	10	350	1400	35	7.20
ZC-OL8NC-06	6.4	11.8	350	1400	50	8.50
ZC-OL8NC-08	8	14.3	325	1300	60	12.60
ZC-OL8NC-10	9.7	16	280	1120	70	14.60
ZC-OL8NC-13	13	20.3	245	980	95	22.50
ZC-OL8NC-16	16	23.5	195	780	125	26.50
ZC-OL8NC-19	19.2	26.5	165	660	150	35.20
ZC-OL8NC-25	25.6	34.7	145	580	200	50.50

## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyester



#### OL 7 MARINE

**Internal layer:** Polyester  
**Reinforcement:** Two polyester braids  
**External layer:** Polyurethane  
**Working temp.:** From -54°C up to +100°C  
 (for water and air up to +70°C)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, fuels, water-based fluids. A pinpricked version is available on request (for gases and air). Resistant to seawater. Flexible even at low temperatures.

**Standards:** SAE 100R7, ISO 3949-R7.

**Assembly:** Use Z type fittings (IT-59).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-OL7MARINE-03	3.5	8.5	230	920	25	5.70
ZC-OL7MARINE-04	4	8.9	250	1000	25	5.80
ZC-OL7MARINE-05	4.8	10	210	840	30	7.30
ZC-OL7MARINE-06	6.4	11.8	200	800	35	9.00
ZC-OL7MARINE-08	8	14.3	190	760	45	12.80
ZC-OL7MARINE-10	9.7	16	175	700	55	15.50
ZC-OL7MARINE-13	13	20.3	140	560	75	21.90
ZC-OL7MARINE-16	16	23.5	105	420	120	27.70
ZC-OL7MARINE-19	19.2	26.5	90	360	145	33.00
ZC-OL7MARINE-25	25.6	32.5	70	280	200	40.30



#### FP 17100 MARINE

**Internal layer:** Polyester  
**Reinforcement:** Two polyester braids  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -40°C up to +93°C  
 (for water and air up to +65°C)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, gases, air, fuels, chemicals, water-based fluids. Resistant to seawater.

**Standards:** SAE 100R7, ISO 3949-R7.

**Assembly:** Use Z type fittings (IT-62).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
MC-FP17100B-05	5	10	208	830	30	7.00
MC-FP17100C-06	6.6	11.8	190	760	40	8.50
MC-FP17100D-08	8	14.2	173	690	50	12.50
MC-FP17100E-10	9.7	16	155	620	70	14.40

## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyester



#### OL 8 MARINE

**Internal layer:** Polyester  
**Reinforcement:** Two aramid braids  
**External layer:** Polyurethane  
**Working temp.:** From -40°C up to +100°C  
 (for water and air up to +70°C)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, fuels, water-based fluids. A pinpricked version is available on request (for gases and air). Resistant to seawater.

**Standards:** SAE 100R8, ISO 3949-R8.

**Assembly:** Use Z type fittings (IT-65).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-OL8MARINE-05	4.8	10	350	1400	35	8.60
ZC-OL8MARINE-06	6.4	11.8	350	1400	50	9.70
ZC-OL8MARINE-08	8	14.3	325	1300	60	12.60
ZC-OL8MARINE-10	9.7	16	280	1120	70	14.90
ZC-OL8MARINE-13	13	20.3	245	980	95	22.50
ZC-OL8MARINE-16	16	23.5	195	780	125	26.50
ZC-OL8MARINE-19	19.2	26.5	165	660	150	35.20



#### ATOXIC 7 MARINE

**Internal layer:** Non-toxic polyester  
**Reinforcement:** Two polyester braids  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -40°C up to +82°C  
 (for water and air up to +70°C)

**Characteristics:** Lightweight, flexible hose designed to transfer fluids, gases and air. The non-toxic internal layer can come into contact with food and breathing air - compliant with the requirements of FDA 21 CRF standard. Suitable for application in high humidity environments. The external layer resistant to UV radiation and microorganisms. Once the fittings are assembled, the hose should be sterilized. Not suitable for medical, pharmaceutical application and food fluids with alcohol content.

**Standards:** SAE 100R7, ISO 3949-R7.

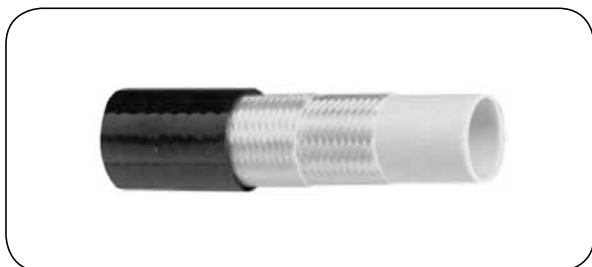
**Assembly:** Use Z type fittings (IT-59).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-AT7MARINE-03	3.5	8.5	230	920	25	5.70
ZC-AT7MARINE-04	4	8.9	250	1000	25	5.80
ZC-AT7MARINE-05	4.8	10	210	840	30	7.30
ZC-AT7MARINE-06	6.4	11.8	200	800	35	9.00
ZC-AT7MARINE-08	8	14.3	190	760	45	12.80
ZC-AT7MARINE-10	9.7	16	175	700	55	15.50
ZC-AT7MARINE-13	13	20.3	140	560	75	21.90
ZC-AT7MARINE-16	16	23.5	105	420	120	27.70
ZC-AT7MARINE-19	19.2	26.5	90	360	145	33.00
ZC-AT7MARINE-25	25.6	32.5	70	280	200	40.30



## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyester



#### ATOXIC 8 MARINE

**Internal layer:** Non-toxic polyester  
**Reinforcement:** Two aramid fibre braids  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -40°C up to +82°C  
 (for water and air up to +70°C)

**Characteristics:** Lightweight, flexible hose designed to transfer fluids, gases and air. The non-toxic internal layer can come into contact with food and breathing air - compliant with the requirements of FDA 21 CRF standard. Suitable for application in high humidity environments. The external layer resistant to UV radiation and microorganisms. Once the fittings are assembled, the hose should be sterilized. Not suitable for medical, pharmaceutical application and food fluids with alcohol content.

**Standards:** SAE 100R8, ISO 3949-R8.

**Assembly:** Use Z type fittings (IT-65).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-AT8MARINE-05	4.8	10	350	1400	35	7.20
ZC-AT8MARINE-06	6.4	11.8	350	1400	50	9.70
ZC-AT8MARINE-10	9.7	16	280	1120	70	14.90
ZC-AT8MARINE-13	13	20.3	245	980	95	22.50
ZC-AT8MARINE-19	19.2	26.5	165	660	150	35.20



#### 050 CO2

**Internal layer:** Polyester  
**Reinforcement:** One steel wire braid  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -60°C up to +93°C

**Characteristics:** Hose designed for CO<sub>2</sub> installations in industrial and marine fire extinguishing systems.

**Assembly:** Use Z type fittings (IT-107).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
TO-050CO2-05	5	9.7	300	1200	30	12.00
TO-050CO2-06	6.5	11.7	275	1100	40	15.50
TO-050CO2-08	8.1	13.2	212	850	55	19.50
TO-050CO2-10	9.8	15.5	212	850	65	23.00
TO-050CO2-13	13	18.8	175	700	85	30.00
TO-050CO2-16	16.3	22	140	560	115	32.00

## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyester



#### 120 AIR CYLINDER FILLING

**Internal layer:** Polyester

**Reinforcement:** One aramid fibre braid

**External layer:** Pinpricked polyurethane

**Working temp.:** From -40°C up to +80°C

**Characteristics:** Hose designed for gas cylinder filling. The odourless internal layer meets the requirements of FDA 21 CRF, Directive 2002/72/EC and CGA G-7.1-2004 (for breathing air). Not suitable for explosive gases, e.g. oxygen, hydrogen.

**Assembly:** Use Z type fittings.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
TO-120ACF-05	5	9.6	420	1680	30	6.50
TO-120ACF-06	6.5	12.1	420	1680	50	9.50



#### 140 BEVERAGE DISPENSING

**Internal layer:** Polyester

**Reinforcement:** 140A - two synthetic fibre braids

140B - steel wire braid

140C - aramid fibre braid

**External layer:** Pinpricked polyurethane

**Working temp.:** From -40°C up to +80°C

**Characteristics:** Hose designed for carbon dioxide, nitrogen, gas mixtures. Intended mainly for beverage dispensing systems e.g. beer or juice dispensers. The odourless internal layer meets the requirements of FDA 21 CRF and Directive 2002/72/EC.

**Assembly:** Use Z type fittings.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
TO-140BD-A-06	6.5	12.2	210	840	35	10.00
TO-140BD-B-06	6.4	11.6	300	1200	40	15.50
TO-140BD-C-06	6.5	11.5	350	1400	50	9.00

# HIGH PRESSURE - hoses

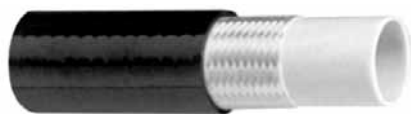
**Table for initial thermoplastic hose selection**  
for paint, solvent, isocyanate, polyol, water-based fluids,  
hydraulic oil (internal layer - polyamide)

max. working pressure [bar]	nominal diameter DN [mm, inch]										
	3	4	5	6	8	10	13	16	19	25	32
	1/8"	5/32"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	1"	1.1/4"
700÷800	see "HIGH PRESSURES chapter, section - UHP" accessories										
450÷500			SK0100 MTK	SK0100	MTK						
400÷450	VE8				SK0100	SK0100 MTK					
350÷400	MT1	AS8SE	S0230	S0230 MT2			MTK				
300÷350			VE8 AS8 MT1	VE8 AS8	VE8 AS8 S0230 MT2 CNG	VE8M MT2 CNG 15RCNG	VE8M SK0100 CNG 15RCNG	MTKMM	VE8M MTKMM CNG 15RCNG	MTKMM CNG 15RCNG	
250÷300				SM040 MT1		VE8 AS8 S0230	MT2				MTKMM
200÷250	VE7	S0190	VE7 AS7 S0190 VE7M	AS7 S0190 VE7M	VE7M SM040 MT1	AS7 VE7M SM040 MT1	VE7M VE8 AS8 S0230	MT2 SK0100 MTK	MT2 MTK	VE8M	VE8M
150÷200	VE5	VE5	VE5	VE7	VE7 AS7 S0190	VE7 S0190	S0190 SM040 MT1	VE8	VE8 SK0100	MT2 SK0100 MTK	
100÷150			S0090	S0090 VE5	S0090 VE5	S0090 VE5	S0090 VE7 AS7	VE7 AS7 S0190 SM040 MT1	S0190 SM040 MT1	VE8 MT1	
50÷100			LPG	LPG			VE5		VE7 AS7	VE7 AS7 S0190 SM040	MT1

The maximum working pressure of a particular hose type (the one given in the catalogue) is in a pressure range in the table above. When selecting a hose for the particular diameter and maximum working pressure it is recommended to read out a suitable hose type, find the precise maximum working pressure in the hose description and consider all additional factors such as: medium, temperature, bending radius, vibrations and dynamic bending, electrical conductivity or antistatic properties, pinpricking of the external layer (for gases and air) and external working conditions of the hose.

## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyamide



#### S 0090

**Internal layer:** Polyamide  
**Reinforcement:** Polyester braid  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -40°C up to +93°C  
 (for water and air up to +65°C)

**Characteristics:** Lightweight, flexible hose designed for solvents, paints, isocyanate, polyol, gases, air and water-based fluids.

**Assembly:** Use Z type fittings (IT-61).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
MC-S0090B-05	5	8.3	130	520	30	3.90
MC-S0090C-06	6.6	11.4	130	520	40	7.50
MC-S0090D-08	8	13.4	120	480	50	10.00
MC-S0090E-10	9.7	15.5	120	480	60	12.40
MC-S0090F-13	13	19.2	110	440	90	20.00



#### VE 5

**Internal layer:** Polyamide  
**Reinforcement:** Polyester braid  
**External layer:** Polyurethane  
**Working temp.:** From -40°C up to +100°C  
 (for water and air up to +70°C)

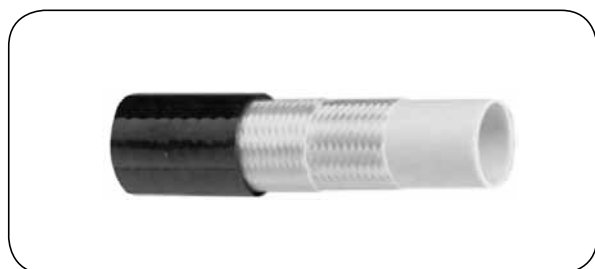
**Characteristics:** Lightweight, flexible hose designed for solvents, paints, isocyanate, polyol and water-based fluids. A pinpricked version is available on request (for gas and air).

**Assembly:** Use Z type fittings (IT-60).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-VE5-03	3.5	7.5	200	800	25	3.60
ZC-VE5-04	4	8	200	800	30	4.10
ZC-VE5-05	4.8	9.2	200	800	30	5.60
ZC-VE5-06	6.4	10.8	145	580	45	6.50
ZC-VE5-08	8	13	120	480	50	9.40
ZC-VE5-10	9.7	14.8	115	460	55	11.50
ZC-VE5-13	13	18.7	80	320	90	15.70

## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyamide



#### VE 7

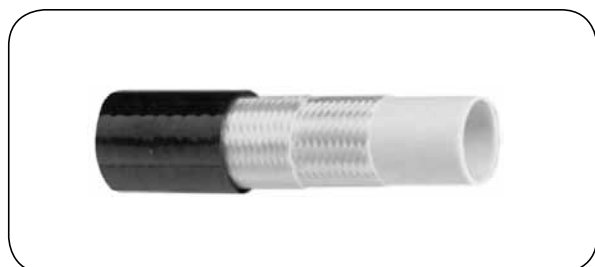
**Internal layer:** Polyamide  
**Reinforcement:** Two polyester braids  
**External layer:** Polyurethane  
**Working temp.:** From -40°C up to +100°C  
 (for water and air up to +70°C)

**Characteristics:** Lightweight, flexible hose designed for solvents, paints, isocyanate, polyol and water-based fluids. A pinpricked version is available on request (for gas and air).

**Standards:** SAE 100R7, ISO 3949-R7.

**Assembly:** Use Z type fittings (IT-59).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-VE7-03	3.5	8.5	230	920	25	5.40
ZC-VE7-05	4.8	10	210	840	30	6.80
ZC-VE7-06	6.4	11.8	200	800	35	8.70
ZC-VE7-08	8	14.3	190	760	45	12.60
ZC-VE7-10	9.7	16	175	700	55	14.60
ZC-VE7-13	13	20.3	140	560	75	21.90
ZC-VE7-16	16	23.5	105	420	120	25.80
ZC-VE7-19	19.2	26.5	90	360	145	30.10
ZC-VE7-25	25.6	32.5	70	280	200	36.90



#### AS 7 CONDUCTIVE

**Internal layer:** Polyamide  
**Reinforcement:** Two polyester braids with conductive fibre  
**External layer:** Polyurethane  
**Working temp.:** From -40°C up to +100°C  
 (for water and air up to +70°C)

**Characteristics:** Lightweight, flexible, antistatic ( $R < 3 \times 10^4 \Omega/m$ ) hose designed for solvents, paints, isocyanate, polyol and water-based fluids. A pinpricked version is available on request (for gases and air).

**Standards:** ISO 8031, SAE 100R7, ISO 3949-R7.

**Assembly:** Use Z type fittings (IT-71).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-AS7-05	4.8	10.5	250	1000	30	7.50
ZC-AS7-06	6.4	12.7	228	912	40	10.20
ZC-AS7-08	8	14.3	190	760	55	12.60
ZC-AS7-10	9.7	17.3	228	912	60	17.90
ZC-AS7-13	13	20.3	140	560	75	21.40
ZC-AS7-16	16	23.5	105	420	120	25.80
ZC-AS7-19	19.2	26.5	90	360	145	30.10
ZC-AS7-25	25.6	32.5	70	280	200	36.90

## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyamide



#### S 0190 / S 2190

**Internal layer:** Polyamide 11-12  
**Reinforcement:** Two polyester braids  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -40°C up to +93°C  
 (for water and air up to +65°C)

**Characteristics:** Lightweight, flexible hose designed for solvents, paints, isocyanate, polyol, gases, air and water-based fluids.

**Standards:** DIN 24951, SAE 100R7, ISO 3949-R7.

**Assembly:** Use Z type fittings (IT-63).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
MC-S0190A-04	4	8.3	235	950	20	4.80
MC-S0190B-05*	5	9.3	220	880	26	5.70
MC-S0190C-06*	6.6	12.5	215	860	30	10.10
MC-S0190D-08*	8	14.3	195	780	40	12.00
MC-S0190E-10*	9.7	16.5	187	750	70	15.00
MC-S0190F-13*	13	20.5	157	630	90	21.80
MC-S0190G-16	16.4	24	130	520	130	25.80
MC-S0190H-19	19.5	27.5	105	420	150	32.20
MC-S0190I-26	26	34.2	77	310	180	43.70

\* - twin version available, code example: MC-S2190C-06.



#### VE 7M

**Internal layer:** Polyamide  
**Reinforcement:** Two polyester braids  
**External layer:** Polyurethane  
**Working temp.:** From -40°C up to +100°C  
 (for water and air up to +70°C)

**Characteristics:** Lightweight, flexible hose designed for solvents, paints, isocyanate, polyol and water-based fluids. A pinpricked version is available on request (for gas and air).

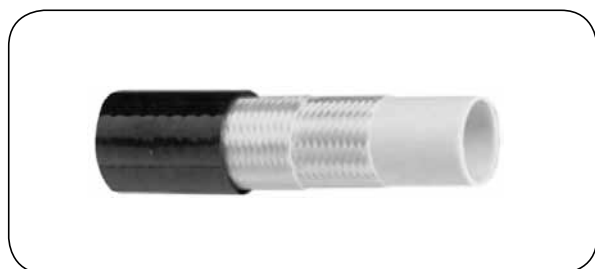
**Standards:** SAE 100R18, ISO 3949-R18.

**Assembly:** Use Z type fittings.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-VE7M-05	4.8	10.5	250	1000	30	7.70
ZC-VE7M-06	6.4	12.7	250	1000	40	10.50
ZC-VE7M-08	8	15	250	1000	50	14.80
ZC-VE7M-10	9.5	18	250	1000	50	19.60
ZC-VE7M-13	13	22.8	210	840	70	30.80

## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyamide



#### VE 8

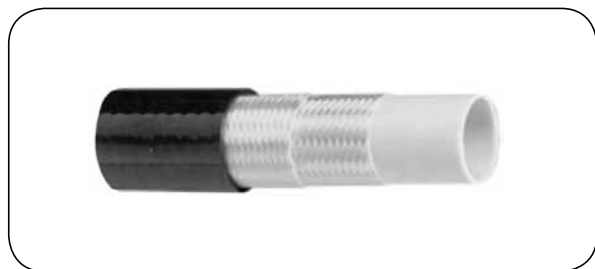
**Internal layer:** Polyamide  
**Reinforcement:** Two aramid fibre braids  
**External layer:** Polyurethane  
**Working temp.:** From -40°C up to +100°C  
 (for water and air up to +70°C)

**Characteristics:** Lightweight, flexible hose designed for solvents, paints, isocyanate, polyol and water-based fluids. A pinpricked version is available on request (for gas and air).

**Standards:** SAE 100R8, ISO 3949-R8.

**Assembly:** Use Z type fittings (IT-65).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-VE8-03	3.5	7.1	420	1680	30	3.10
ZC-VE8-05	4.8	10	350	1400	35	8.80
ZC-VE8-06	6.4	11.8	350	1400	50	8.30
ZC-VE8-08	8	14.3	325	1300	60	12.20
ZC-VE8-10	9.7	16	280	1120	70	14.00
ZC-VE8-13	13	20.3	245	980	95	21.80
ZC-VE8-16	16	23.5	195	780	125	28.50
ZC-VE8-19	19.2	26.5	165	660	150	34.10
ZC-VE8-25	25.6	34.7	145	580	200	47.50



#### AS 8 CONDUCTIVE

**Internal layer:** Polyamide  
**Reinforcement:** Two aramid fibre braids  
 with conductive fibre  
**External layer:** Polyurethane  
**Working temp.:** From -40°C up to +100°C  
 (for water and air up to +70°C)

**Characteristics:** Lightweight, flexible, antistatic ( $R < 3 \times 10^4 \Omega/m$ ) hose designed for solvents, paints, isocyanate, polyol and water-based fluids. A pinpricked version is available on request (for gas and air).

**Standards:** ISO 8031, SAE 100R8, ISO 3949-R8.

**Assembly:** Use Z type fittings (IT-65).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-AS8-05	4.8	10	350	1400	35	8.80
ZC-AS8-06	6.4	11.8	350	1400	50	10.20
ZC-AS8-08	8	14.3	325	1300	60	12.20
ZC-AS8-10	9.7	16	280	1120	70	16.80
ZC-AS8-13	13	20.3	245	980	95	21.80

## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyamide



#### AS 8 SELF EXTINGUISHING

**Internal layer:** Polyamide  
**Reinforcement:** Aramid fibre braids  
**External layer:** Polyurethane  
**Working temp.:** From -40°C up to +100°C  
 (for water and air up to +70°C)

**Characteristics:** Lightweight, flexible, antistatic ( $R < 1.2 \times 10^5 \Omega/m$ ) hose designed for solvents, paints, isocyanate, polyol, water-based fluids. Pinpricked on request (for gases and air). The self-extinguishing outer layer is rated at V0 flammability class according to UL 94 standard.

**Standards:** ISO 8031.

**Assembly:** Contact Technical Department of TUBES INTERNATIONAL®.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-AS8SE-04	4	8	400	1600	35	4.30



#### S 0230 / S 2230

**Internal layer:** Polyamide  
**Reinforcement:** Two aramid fibre braids  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -40°C up to +93°C  
 (for water and air up to +65°C)

**Characteristics:** Lightweight, flexible hose designed for solvents, paints, isocyanate, polyol, gases, air and water-based fluids.

**Standards:** SAE 100R8, ISO 3949-R8.

**Assembly:** Use Z type fittings (IT-64).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
MC-S0230B-05	5	9.3	362	1450	22	5.80
MC-S0230C-06*	6.6	12.5	362	1450	30	10.00
MC-S0230D-08*	8	14.3	350	1400	40	12.20
MC-S0230E-10*	9.7	16.5	300	1200	70	15.80
MC-S0230F-13*	13	20.5	250	1000	90	21.90

\* - a twin version available, code example: MC-S2230C-06.



## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyamide



#### VE 8M

**Internal layer:** Polyamide  
**Reinforcement:** Two aramid fibre braids  
**External layer:** Polyurethane  
**Working temp.:** From -40°C up to +93°C  
 (for water and air up to +65°C)

**Characteristics:** Lightweight, flexible hose designed for solvents, paints, isocyanate, polyol, water-based fluids. Pinpricked for sizes above 3/8" (for gases and air).

**Standards:** SAE 100R8, ISO 3949-R8.

**Assembly:** Contact Technical Department of TUBES INTERNATIONAL®.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-VE8M-10	9.7	16	350	1400	80	16.60
ZC-VE8M-13	13	22	350	1400	100	27.80
ZC-VE8M-19	19.2	29	345	1380	205	40.30
ZC-VE8M-25	25.8	35	250	1000	230	48.60
ZC-VE8M-32	32	45	250	1000	350	83.00



#### SM 040 / SM 240

**Internal layer:** Polyamide 11-12  
**Reinforcement:** One steel wire braid  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -40°C up to +93°C  
 (for water and air up to +65°C)

**Characteristics:** Lightweight, flexible hose designed for solvents, paints, isocyanate, polyol, gases, air and water-based fluids.

**Assembly:** Use Z type fittings (IT-67).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
MC-SM040B-05	5	9.3	287	1150	20	10.70
MC-SM040C-06*	6.6	12	275	1100	35	16.80
MC-SM040D-08*	8	13.5	215	860	40	18.40
MC-SM040E-10*	9.9	15.5	215	860	60	24.90
MC-SM040F-13*	13	19.5	180	720	70	29.60
MC-SM040G-16	16.4	22	145	580	110	37.80
MC-SM040H-19	19.5	26.5	120	480	150	44.80
MC-SM040I-26	26	34.2	97	390	170	53.70

\* - a twin version available, code example: MC-SM240C-06.

## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyamide



#### MT 1 / MTB 1

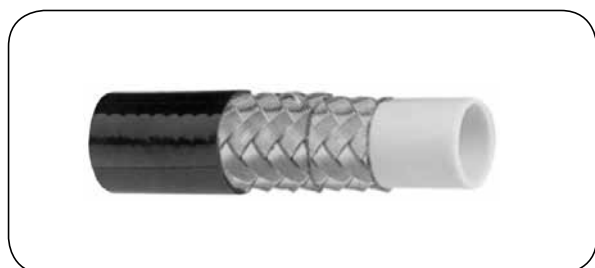
**Internal layer:** Polyamide  
**Reinforcement:** One steel wire braid  
**External layer:** Polyurethane  
**Working temp.:** From -40°C up to +100°C  
 (for water and air up to +70°C)

**Characteristics:** Lightweight, flexible hose designed for solvents, paints, isocyanate, polyol and water-based fluids. A pinpricked version is available on request (for gas and air).

**Assembly:** Use Z type fittings (IT-66).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-MT1-03	3.5	7.5	375	1500	30	7.60
ZC-MT1-05*	4.8	10	350	1400	30	13.10
ZC-MT1-06*	6.4	11.9	300	1200	40	16.50
ZC-MT1-08*	8	14	240	960	50	20.50
ZC-MT1-10*	9.7	16	225	900	60	25.30
ZC-MT1-13*	13	19.2	190	760	75	31.40
ZC-MT1-16	16.3	23.3	150	600	110	40.60
ZC-MT1-19	19.2	25.5	130	520	150	44.70
ZC-MT1-25	25.6	32.5	105	420	185	59.00

\* - a twin version available, code example: ZC-MTB1-06.



#### MT 2 / MTB 2

**Internal layer:** Polyamide  
**Reinforcement:** Two steel wire braids  
**External layer:** Polyurethane  
**Working temp.:** From -40°C up to +100°C  
 (for water and air up to +70°C)

**Characteristics:** Lightweight, flexible hose designed for solvents, paints, isocyanate, polyol and water-based fluids. A pinpricked version is available on request (for gas and air).

**Assembly:** Use Z type fittings (IT-68).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-MT2-06*	6.4	13.5	400	1600	40	28.60
ZC-MT2-08*	8	15.1	350	1400	50	34.00
ZC-MT2-10*	9.7	17	330	1320	60	40.80
ZC-MT2-13*	13	22	275	1100	75	58.20
ZC-MT2-16	16.3	24.5	250	1000	110	63.90
ZC-MT2-19	19.2	27.5	215	860	150	76.50
ZC-MT2-25	25.6	35	165	660	185	102.60

\* - a twin version available, code example: ZC-MTB2-06.

## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyamide



#### SK 0100 / SK 2100

**Internal layer:** Polyamide 11-12  
**Reinforcement:** One aramid fibre braid  
+ one steel wire braid  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -40°C up to +93°C

**Characteristics:** Lightweight, flexible hose designed for solvents, paints, isocyanate, polyol, gases, air and water-based fluids.

**Assembly:** Use Z type fittings (IT-70).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
MC-SK0100B-05	5	11.2	500	2000	30	14.20
MC-SK0100C-06*	6.6	13.2	500	2000	40	19.20
MC-SK0100D-08*	8	15.2	450	1800	50	22.50
MC-SK0100E-10*	9.8	18.5	425	1700	80	34.50
MC-SK0100F-13*	13	21.5	350	1400	90	37.80
MC-SK0100G-16*	16.4	24.5	225	900	100	45.90
MC-SK0100H-19*	19.5	28	200	800	130	50.50
MC-SK0100I-26*	26	35	175	700	150	64.60

\* - a twin version available, code example: ZC-MTKB-06.



#### MTK / MTBK

**Internal layer:** Polyamide  
**Reinforcement:** One aramid fibre braid  
+ one steel wire braid  
**External layer:** Polyurethane  
**Working temp.:** From -40°C up to +100°C  
(for water and air up to +70°C)

**Characteristics:** Lightweight, flexible hose designed for solvents, paints, isocyanate, polyol and water-based fluids. A pinpricked version is available on request (for gas and air).

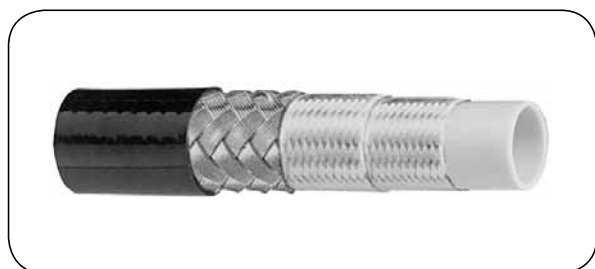
**Assembly:** Use Z type fittings (IT-69).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-MTK-05*	4.8	11.3	500	2000	30	16.70
ZC-MTK-08*	8	16	500	2000	50	29.20
ZC-MTK-10*	9.5	18	425	1700	60	34.00
ZC-MTK-13*	13	22	375	1500	75	44.80
ZC-MTK-16	16	25	250	1000	110	51.00
ZC-MTK-19	19.2	28.2	225	900	150	60.00
ZC-MTK-25	25.8	35.4	200	800	250	81.00

\* - a twin version available, code example: ZC-MTKBK06.

## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyamide



#### MTKM MARINE

**Internal layer:** Polyamide  
**Reinforcement:** Two aramid fibre braid  
+ one steel wire braid  
**External layer:** Polyurethane  
**Working temp.:** From -40°C up to +100°C  
(for water and air up to +70°C)

**Characteristics:** Lightweight, flexible hose designed for solvents, paints, isocyanate, polyol and water-based fluids. A pinpricked version is available on request (for gas and air). Resistant to seawater.

**Assembly:** Contact Technical Department of TUBES INTERNATIONAL®.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-MTKMMARINE-16	16	26	350	1400	200	55.70
ZC-MTKMMARINE-19	19.2	30.2	325	1300	230	69.50
ZC-MTKMMARINE-25	25.8	38	325	1300	250	97.20
ZC-MTKMMARINE-32	32	45.2	275	1100	350	120.60



#### CNG

**Internal layer:** Black, conductive polyamide  
**Reinforcement:** Two aramid fibre braids  
**External layer:** Red pinpricked polyurethane  
**Working temp.:** From -40°C up to +82°C

**Characteristics:** Lightweight, flexible, antistatic ( $R < 1.2 \times 10^5 \Omega/m$ ) hose designed to transfer natural gas (CNG - Compressed Natural Gas). Used for filling the tanks of CNG vehicles.

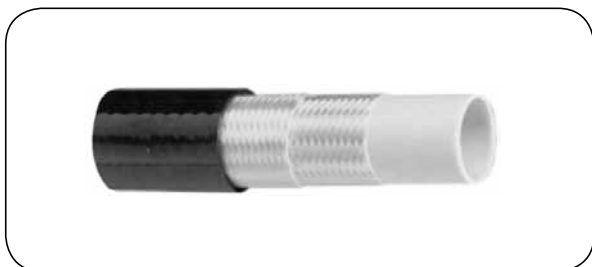
**Standards:** ISO 8031, ISO 15500-17.

**Assembly:** Contact Technical Department of TUBES INTERNATIONAL®.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-CNG-06	6.4	12.5	345	1380	45	10.50
ZC-CNG-08	8	15	345	1380	60	14.20
ZC-CNG-10	9.7	16.5	345	1380	75	15.50
ZC-CNG-13	13	22	345	1380	95	24.50
ZC-CNG-19	19.2	29	345	1380	185	36.00
ZC-CNG-25	25.6	38	345	1380	230	51.00

## HIGH PRESSURE - hoses

### Thermoplastic hoses - polyamide



#### LPG

**Internal layer:** Polyamide  
**Reinforcement:** Polyester braid  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -25°C up to +125°C



**Characteristics:** Lightweight, flexible hose designed for low pressure industrial installations. Recommended for autogas (LPG - Liquefied Petroleum Gas) in particular. When used in a car LPG system, connects LPG fuel tank with other parts of the system. In order to maintain LPG vehicle approval, special threaded fittings made of brass should be used.

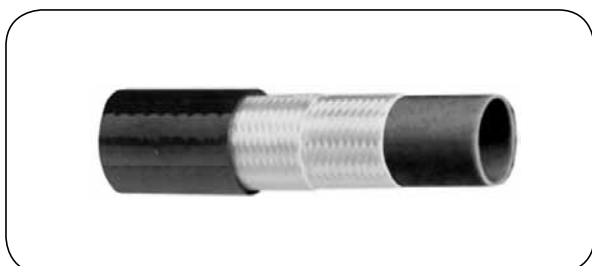
**Standards:** ECE R67-01.

**Assembly:** Contact Technical Department of TUBES INTERNATIONAL®.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
LE-LPG-05L	4.8	8.8	30	200	25	5.00
LE-LPG-05F	5.0	9.6	30	200	25	5.90
LE-LPG-06L	6.5	11.4	30	200	35	8.50
LE-LPG-06F	6.5	12.2	30	200	35	9.50

#### LPG hose fittings

pipe O.D.	hose I.D. [inch]		
		pipe fitting (straight)	pipe fitting (90° elbow)
6	3/16"	LE-LPG-S-06	LE-LPG-S90-06
8	1/4"	LE-LPG-S-08	LE-LPG-S90-08



#### 15R CNG

**Internal layer:** Conductive polyamide  
**Reinforcement:** One or two aramid fibre braids  
**External layer:** Red pinpricked polyurethane  
**Working temp.:** From -40°C up to +70°C

**Characteristics:** Lightweight, flexible hose intended for natural gas (CNG - Compressed Natural Gas). Used for filling the tanks of CNG vehicles. A twin version with a venting tube is available.

**Assembly:** Use P type fittings (IT-98).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
TO-15RCNG-06	6.5	13.7	350	1400	50	12.00
TO-15RCNG-10	9.7	18.9	350	1400	70	22.00
TO-15RCNG-13	13	22.9	350	1400	90	29.00
TO-15RCNG-19	19.5	29.6	350	1400	180	40.00
TO-15RCNG-25	25.9	39	350	1400	200	71.50

## HIGH PRESSURE - hoses

### Thermoplastic hoses - PTFE



#### MT 1 HT

**Internal layer:** PTFE

**Reinforcement:** One steel wire braid

**External layer:** Polyurethane

**Working temp.:** From -40°C up to +135°C

**Characteristics:** Lightweight, flexible hose designed for hydraulic fluids, aggressive chemicals, foodstuffs. Pin-pricked on request (for gases and air). Resistant to high temperatures.

**Assembly:** Use Z type fittings.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-MT1HT-03	3.5	7.5	375	1500	30	7.60
ZC-MT1HT-05	4.8	10	350	1400	30	13.30
ZC-MT1HT-06	6.4	11.9	300	1200	40	16.50
ZC-MT1HT-08	8	14	240	960	50	20.50
ZC-MT1HT-10	9.7	16	225	900	60	25.30
ZC-MT1HT-13	13	19.2	190	760	75	31.40
ZC-MT1HT-16	16.3	23.3	150	600	110	40.60
ZC-MT1HT-19	19.2	25.5	130	520	150	44.70
ZC-MT1HT-25	25.6	32.5	105	420	185	59.00
ZC-MT1HT-32	32	40	70	280	290	84.20

## HIGH PRESSURE - hoses

### Thermoplastic hoses EATON SYNFLEX®

EATON SYNFLEX® thermoplastic hoses are reliable and extremely durable for long service life. They are suitable for special and highly demanding applications. The hoses are lightweight and available in long continuous lengths, which is only a few among numerous other advantages of the hoses.



#### 3130

**Internal layer:** Polyamide  
**Reinforcement:** Polyester braids  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -40°C up to +100°C  
From -40°C up to +66°C (water-based fluids, non-flammable and fire resistant oils)

**Characteristics:** Lightweight, flexible hose designed for isocyanate, polyol, solvents and paints, gases and air, hydraulic installations.

**Standards:** SAE 100R7.

**Assembly:** Contact Technical Department of TUBES INTERNATIONAL®.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
SY-3130-03	3.2	8.5	172	689	13	4.00
SY-3130-05	4.8	10.8	207	827	19	7.00
SY-3130-06	6.4	13	207	759	32	9.00
SY-3130-08	7.9	15.1	172	689	44	12.00
SY-3130-10	9.5	17	155	620	51	12.00
SY-3130-13	12.7	20.7	138	620	76	16.00
SY-3130-19	19.1	27.1	86	345	127	27.00
SY-3130-25	25.4	34	69	276	203	46.00



#### 37AL

**Internal layer:** Polyester  
**Reinforcement:** Polyester braids  
**External layer:** Non-stick orange polyurethane  
**Working temp.:** From -54°C up to +100°C  
From -40°C up to +60°C (water-based fluids, non-flammable and fire resistant oils)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, fuels and water-based fluids. Can be used near electrical transformers, medium and high voltage installations. Non-conductive - a leakage current in test conditions according to the standard, less than 50 µA at 246 kV/m voltage for 5 min.

**Standards:** SAE 100R7, ANSI A92.2.

**Assembly:** Contact Technical Department of TUBES INTERNATIONAL®.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
SY-37AL-05	4.8	10.8	207	827	19	7.00
SY-37AL-06	6.4	12.3	190	759	32	9.00
SY-37AL-08	7.9	14.7	172	689	44	11.00
SY-37AL-10	9.5	16.1	155	620	51	14.00
SY-37AL-13	12.7	20.7	155	620	76	21.00

## HIGH PRESSURE - hoses

### Thermoplastic hoses EATON SYNPLEX®



#### 30CT

**Internal layer:** Poliester  
**Reinforcement:** Polyester braids  
**External layer:** Non-stick pinpricked polyester  
**Working temp.:** From -54°C up to +94°C  
 From -54°C up to +66°C (water-based fluids, non-flammable and fire resistant oils)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, gases, air, fuel and water-based fluids. Resistant to very low temperatures.

**Standards:** SAE 100R18.

**Assembly:** Contact Technical Department of TUBES INTERNATIONAL®.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
SY-30CT-05	4.8	10.7	210	840	25.4	8.00
SY-30CT-06	6.4	12.1	210	840	31.8	9.00
SY-30CT-08	7.9	15.5	210	840	38.1	15.00
SY-30CT-10	9.5	16.8	210	840	50.8	18.00
SY-30CT-13	12.7	21.6	210	840	88.9	25.00
SY-30CT-16	16	27.0	210	840	101.6	41.00



#### 3R80

**Internal layer:** Polyamide  
**Reinforcement:** Polyester braids  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -40°C up to +100°C  
 From -40°C up to +66°C (water-based fluids, non-flammable and fire resistant oils)

**Characteristics:** Lightweight, flexible hose designed for isocyanate, polyol, solvents and paints, gases and water, hydraulic installations.

**Standards:** SAE 100R8.

**Assembly:** Contact Technical Department of TUBES INTERNATIONAL®.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
SY-3R80-05	4.8	13.1	350	1400	38	11.00
SY-3R80-06	6.4	15.9	350	1400	51	18.00
SY-3R80-10	9.5	19.4	280	1120	64	22.00
SY-3R80-13	12.7	22.7	245	980	102	28.00
SY-3R80-19	19.1	28.9	157	628	165	38.00
SY-3R80-25	25.4	37.3	140	560	254	57.00



## HIGH PRESSURE - hoses

### Thermoplastic hoses EATON SYNPLEX®



#### 3E80

**Internal layer:** Polyester  
**Reinforcement:** Polyester braids  
**External layer:** Orange polyurethane  
**Working temp.:** From -40°C up to +100°C  
 From -40°C up to +66°C (water-based fluids, non-flammable and fire resistant oils)

**Characteristics:** Lightweight, flexible hose designed for hydraulic oil installations, fuels and water-based fluids. Can be used near electrical transformers, medium and high voltage installations. Non-conductive - a leakage current in test conditions according to the standard, less than 50 µA at 246 kV/m voltage for 5 min.

**Standards:** SAE 100R8.

**Assembly:** Contact Technical Department of TUBES INTERNATIONAL®.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
SY-3E80-05	4.8	13.1	350	1400	38	11.00
SY-3E80-06	6.4	15.9	350	1400	51	18.00
SY-3E80-10	9.5	19.4	280	1120	64	22.00
SY-3E80-13	12.7	22.7	245	980	102	28.00
SY-3E80-19	19.1	28.9	157	628	165	38.00
SY-3E80-25	25.4	37.3	140	560	254	57.00



#### 3800

**Internal layer:** Polyester  
**Reinforcement:** Aramid braids  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -40°C up to +100°C  
 From -40°C up to +66°C (water-based fluids, non-flammable and fire resistant oils)

**Characteristics:** Lightweight, flexible hose designed for solvents, paints, isocyanate, polyol, gases, air, water-based fluids.

**Standards:** SAE 100R8.

**Assembly:** Contact Technical Department of TUBES INTERNATIONAL®.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
SY-3800-03	3.2	8.5	413	1655	20	4.00
SY-3800-05	4.8	11	345	1379	38	9.00
SY-3800-06	6.4	13.5	345	1379	51	12.00
SY-3800-10	9.5	16.9	276	1103	64	16.00
SY-3800-13	12.7	21.3	240	965	102	22.00

## HIGH PRESSURE - fittings

Proper selection and assembly of fittings is as important for safe and long-lasting operation of a hose assembly as the selection of a hose itself. When choosing a fitting, not only working parameters of the hose assembly must be taken into consideration (see section I - Intro) but also the type of the hose they are meant for.

### Fittings for high pressure hose assemblies:

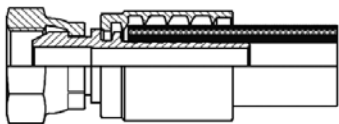
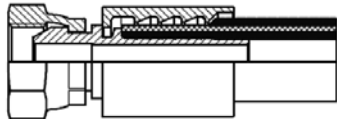
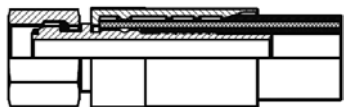
There is a great number of fitting types used and manufactured worldwide. They meet the requirements of international, domestic or a particular producer's standards. All fittings are divided according to the way the connecting side is finished (type of sealing, thread and size), but also the way the fittings are assembled on the hose. Taking this into account, there are the following types:

- two-piece crimp fittings,
- one-piece (integral) crimp fittings,
- two-piece reusable fittings.

TUBES INTERNATIONAL® supplies reusable and two-piece crimp fittings.

The two-piece crimp fittings are selected according to the type of a high pressure hose, following the technological guidelines of the manufacturer or supplier. The types of fittings and ferrules as well as technological details of the assembly process (hose preparation, crimp diameter) are given in the manuals.

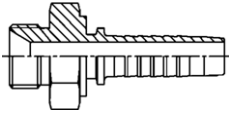
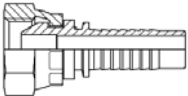
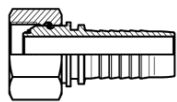
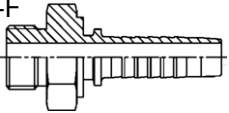
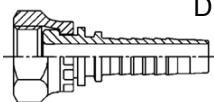
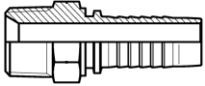
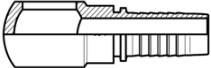
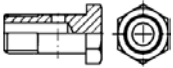

Each type of a hydraulic hose requires special preparation of the hose end for a particular connector, different fitting or ferrule.

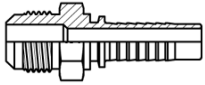
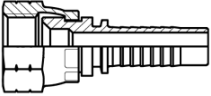
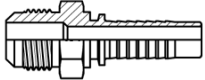
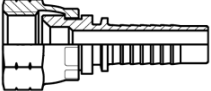
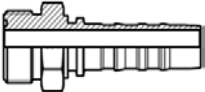

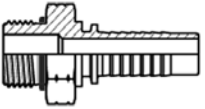
assembly	hoses	fittings	ferrules
non-skived 	textile braid	TI-Z	TI-L, MC-BP, MC-BX, ZC-BP and others
	thermoplastic		
	1SN / 2SN / 1SC / 2SC		TI-Z
	4SP / 4SH / R13 / R15	TI-N	TI-N
external skiving 	1ST / 2ST	TI-Z	-
	4SP / 4SH		TI-M
external and internal skiving 	4SH / R13 / R15	TI-IL	TI-IL

### Fittings material:

Zinc-plated carbon steel or stainless steel (AISI 316 or AISI 304) as a standard. Sealing material (O-rings) - NBR as a standard, Viton optional.

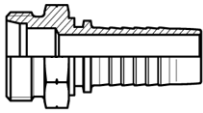
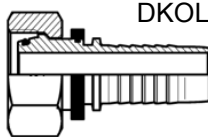
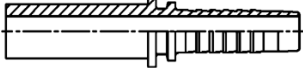
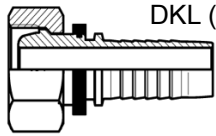
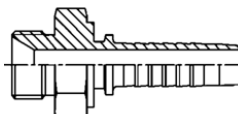
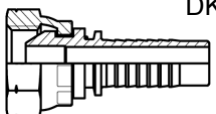
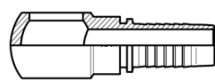
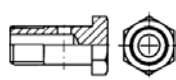
## HIGH PRESSURE - fittings

Fittings with imperial pipe thread		
AGR 	DKR  DKOR 	BSP thread, 60° cone sealing DKR - 60° cone, metal-metal sealing. DKOR - 60° cone, sealing with O-ring.
AGR-F 	DKR-F 	BSP thread, flat sealing Additional flat seal required.
AGR-K 		BSPT thread, sealing on the thread Additional sealant (PTFE type or anaerobic sealant) required. Possible sealing on 60° cone.
RNR 		BANJO bolt with BSP thread Sealing with the use of washers between fitting, bolt head and connection surface.
AGN 		NPT thread, sealing on thread Additional sealant (PTFE type or anaerobic sealant) required. Possible sealing on 60° cone.

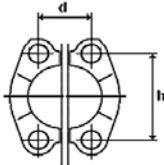
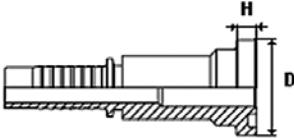
Fittings with imperial UNF thread		
AGJ 	DKJ 	JIC, imperial UNF thread 74° cone, metal-metal sealing.
		SAE 90°, imperial UNF thread 90° cone, metal-metal sealing.
AGO 	DKO 	ORFS, imperial UNF thread Flat-face seal with O-ring
		SAE, imperial UNF thread O-ring sealing

# HIGH PRESSURE - fittings

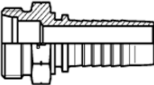
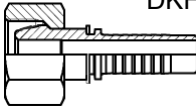

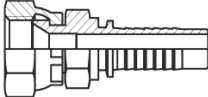
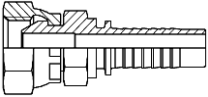

## Fittings with metric thread

 <p>CEL (CES)</p>  <p>DKOL (DKOS)</p>  <p>BEL (BES)</p>  <p>DKL (DKS)</p>  <p>AGM</p>  <p>DKM</p>	<p>Metric thread - cone 24°</p> <p>DKOL (DKOS) - Light (heavy) duty, 24° cone with O-ring.  DKL (DKS) - light (heavy) duty - 24°/60° cone, metal-metal sealing.  CEL (CES) - light (heavy) duty - cone 24° sealing.  BEL (BES) - light (heavy) duty - sealing of cutting ring</p> <p>Metric thread - cone 60°.</p> <p>DKM - 60° cone, metal-metal sealing.  AGM - 60° cone, metal-metal sealing.</p>
<p>RNM</p>  	<p>BANJO bolt with metric thread.</p> <p>Sealing with the use of washers between fittings, bolt head and connection surface.</p>

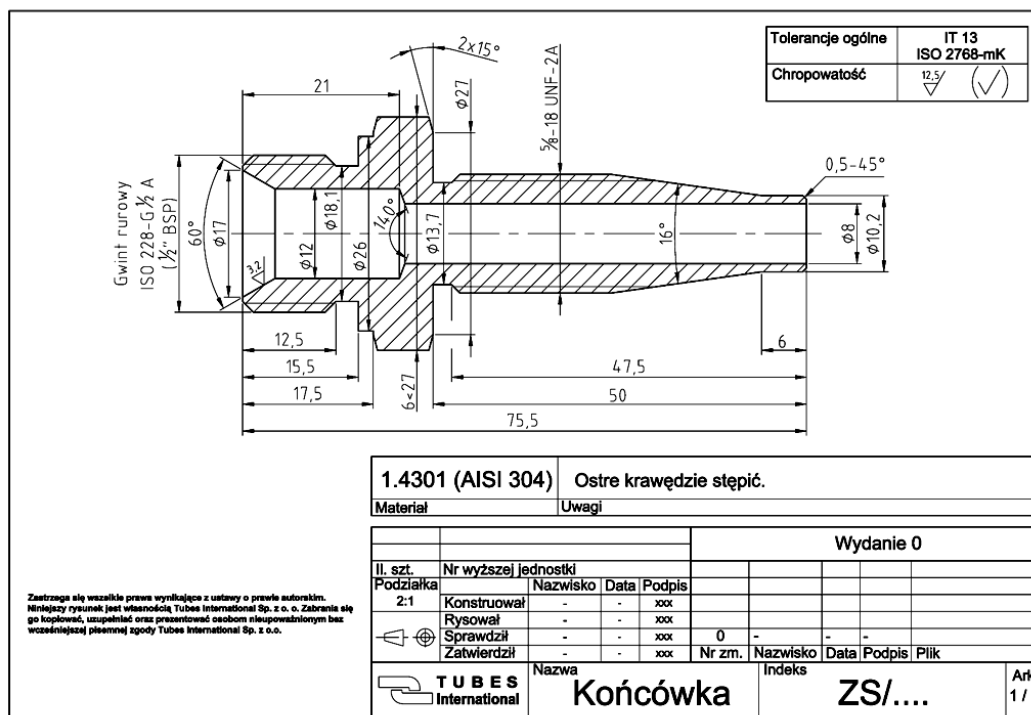
## Flanged fittings

<div></div>									<div>Flanged SAE</div> <div>* - JIS flange (KOMATSU)</div> <div>Sealing of O-ring</div>			
flange size [inch]	light duty (3000 PSI)				heavy duty (6000 PSI)				SUPER CAT			
	D	H	d	h	D	H	d	h	D	H	d	h
1/2	30.2	6.7	17.5	38.1	31.8	7.8	18.2	40.5	31.8	14.2	-	-
5/8*	34.0	6.7	19.8	42.9	-	-	-	-	-	-	-	-
3/4	38.1	6.7	22.2	47.6	41.3	8.8	23.8	50.8	41.3	14.2	23.8	50.8
1	44.5	8	26.2	52.4	47.6	9.5	27.8	57.2	47.6	14.2	27.8	57.2
1.1/4	50.8	8	30.2	58.7	54.0	10.3	31.8	66.7	54.0	14.2	31.8	66.7
1.1/2	60.3	8	35.7	69.8	63.5	12.6	36.5	79.4	63.5	14.2	-	-
2	71.4	9.5	42.9	77.8	79.5	12.6	44.5	96.8	79.5	14.2	-	-
2.1/2	84.1	9.6	50.8	88.9	-	-	-	-	-	-	-	-
3	101.6	9.6	61.9	106.4	-	-	-	-	-	-	-	-
3.1/2	114.3	11.3	69.9	120.7	-	-	-	-	-	-	-	-
4	127	11.3	77.8	130.2	-	-	-	-	-	-	-	-
5	152.4	11.3	92.1	152.4	-	-	-	-	-	-	-	-

# HIGH PRESSURE - fittings

Other endings	
<div>AGF</div>  <div>DKF</div>  <div>BEF</div> 	Metric thread, fitting according to French standards: DKF - 24° cone, metal-metal sealing. AGF - 24° cone sealing. BEF - sealing of cutting ring
	JIS, metric thread (KOMATSU) 60° cone, metal-metal sealing.
	JIS, BSP thread (TOYOTA) 60° cone, metal-metal sealing.
	STECK-O, plug ending O-ring seal

## Fitting according to customer's specification



## HIGH PRESSURE - fittings

### The codes of ferrules and hydraulic fittings and types of the fitting connecting part:

Ferrules and hydraulic fittings are marked with a code that facilitates its recognition:

- a) The thread size of a fitting connecting part as well as hose size, which the fitting and ferrule are intended for, is given in a sixteenth part of an inch - unit of measure is 1/16".

The most common marking:

thread size or hose size [inch]	for hose		size in a sixteenth part of an inch	dash number
	I.D. [mm]	DN [mm]		
1/8	3.2	3	2/16	-02
3/16	4.8	5	3/16	-03
1/4	6.4	6	4/16	-04
5/16	7.9	8	5/16	-05
3/8	9.5	10	6/16	-06
1/2	12.7	12 (13)	8/16	-08
5/8	15.9	16	10/16	-10
3/4	19.1	19 (20)	12/16	-12
1	25.4	25	16/16	-16
1.1/4	31.8	32	20/16	-20
1.1/2	38.1	38 (40)	24/16	-24
2	50.8	50 (51)	32/16	-32

- b) A code example of a straight BSP fitting with 3/8" female thread for 1/2" hose:

**TI - ZBW110 - 06 - 08**

- TI** - code group (TUBES INTERNATIONAL®),  
**Z** - standard fitting (**Z**), also: **IL** - for 4 and 6 spirals hoses - INTERLOCK system, **S** - reusable fitting,  
**B** - the end of a connection part - BSP thread, also: **M** - metric, **J** - JIC, **S** - SAE flange,  
**W** - female thread, also: **Z** - male thread, **K** - flange, etc.,  
**1** - straight fitting, also: **2** - 90° elbow, **3** - 45° elbow, **4**, **5** and **6** - special,  
**10** - specific type of the connection part which describes a kind of sealing, etc.,  
**-06** - thread size 3/8",  
**-08** - hose size 1/2".

- c) A code example of a ferrule for 1/2" hose according to SAE100R2AT (two braids, non-skived):

**TI - Z2TX- 08**

- TI** - code group (TUBES INTERNATIONAL®),  
**Z** - standard ferrule (**Z**), also: **M** - for multispiral hoses, **IL** - for multispiral hoses - INTERLOCK system,  
**2TX** - particular hose type which the ferrule is intended for,  
**-08** - hose size 1/2".

### STAINLESS STEEL CONNECTORS

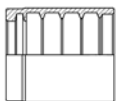

Most of fittings and ferrules, described in our catalogue, are available in stainless steel. Their codes require adding SS suffix. During ordering or enquiry process the grade of stainless steel should be determined by the customer. The most popular grades are AISI 304 and AISI 316 (see TECHNICAL INFORMATION at the end of the catalogue).

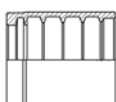

### FITTINGS IDENTIFICATION

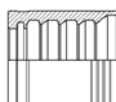
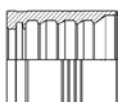
Information given in this catalogue enable correct identification of a fitting type and a thread size of a connector (pipe stub, flange). The thread should be measured with a calliper and the number of threads per inch with a thread pitch gauge. Having such data, any type of fitting can be identified with help of the table for thread identification in TECHNICAL INFORMATION chapter at the end of the catalogue.

# HIGH PRESSURE - fittings

## Standard fittings - Z type

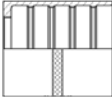
TI-Z STANDARD	Crimp ferrules for hydraulic rubber hoses			
	Z1TX		Z2TX	
hose I.D. [inch]				
	code	hose type	code	hose type
3/16	TI-Z1TX-03	1SN(R1AT)	TI-Z2TX-03	2SN(R2AT)
1/4	TI-Z1TX-04	1SN(R1AT) / 2SC	TI-Z2TX-04	1SN(R1AT) / 2SN(R2AT)
5/16	TI-Z1TX-05		TI-Z2TX-05	
3/8	TI-Z1TX-06		TI-Z2TX-06	
1/2	TI-Z1TX-08		TI-Z2TX-08	
5/8	TI-Z1TX-10		TI-Z2TX-10	
3/4	TI-Z1TX-12		TI-Z2TX-12	
1	TI-Z1TX-16		TI-Z2TX-16	
1.1/4	TI-Z1TX-20	1SN(R1AT)	TI-Z2TX-20	2SN(R2AT)
1.1/2	TI-Z1TX-24		TI-Z2TX-24	
2	TI-Z1TX-32		TI-Z2TX-32	

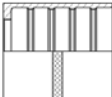
TI-Z STANDARD	Crimp ferrules for hydraulic rubber hoses			
	Z1TC		ZF12T	
hose I.D. [inch]				
	code	hose type	code	hose type
1/4	TI-Z1TC-04	1SC	TI-ZF12T-04-SS	1SN(R1AT) / 2SN(R2AT)
5/16	TI-Z1TC-05		TI-ZF12T-05-SS	
3/8	TI-Z1TC-06		TI-ZF12T-06-SS	
1/2	TI-Z1TC-08		TI-ZF12T-08-SS	
5/8	TI-Z1TC-10		TI-ZF12T-10-SS	
3/4	TI-Z1TC-12		TI-ZF12T-12-SS	
1	TI-Z1TC-16		TI-ZF12T-16-SS	
1.1/4			TI-ZF12T-20-SS	
1.1/2			TI-ZF12T-24-SS	
2			TI-ZF12T-32-SS	

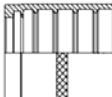
TI-M STANDARD	Crimp ferrules for hydraulic rubber hoses			
	M9X		M4X	
hose I.D. [inch]				
	code	hose type	code	hose type
1/4	TI-M9X-04	4SP		
3/8	TI-M9X-06			
1/2	TI-M9X-08			
5/8	TI-M9X-10			
3/4	TI-M9X-12	4SP 4SH		
1	TI-M9X-16			
1.1/4	TI-M9X-20	4SP	TI-M4X-20	4SH
1.1/2	TI-M9X-24		TI-M4X-24	
2	TI-M9X-32		TI-M4X-32	

# HIGH PRESSURE - fittings

## Standard fittings - Z type

ZC-BP5		Crimp ferrule for thermoplastic hoses	
hose I.D. [inch]	ferrule I.D. [mm]		
		code	hose type
1/8	7.8	ZC-BP5-02	OL5 / VE5
5/32	8.6	ZC-BP5-025	
3/16	9.8	ZC-BP5-03	
1/4	11.1	ZC-BP5-04	
5/16	13.8	ZC-BP5-05	
3/8	15.1	ZC-BP5-06	
1/2	19.1	ZC-BP5-08	

ZC-BP7 / BP8		Crimp ferrule for thermoplastic hoses	
hose I.D. [inch]	ferrule I.D. [mm]		
		code	hose type
1/8	9	ZC-BP7-02	SAE100R7
5/32	9.3	ZC-BP7-025	
3/16	10.7	ZC-BP7-03	
1/4	12.4	ZC-BP7-04	
5/16	15.4	ZC-BP7-05	
3/8	17	ZC-BP7-06	
1/2	21.5	ZC-BP7-08	
5/8	24.2	ZC-BP7-10	
3/4	27.1	ZC-BP7-12	
1	33.1	ZC-BP7-16	
1	55.5	ZC-BP8-16	SAE100R8

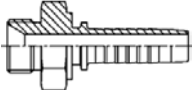
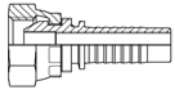
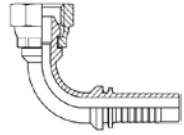
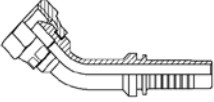
MC-BX7		Crimp ferrule for thermoplastic hoses	
hose I.D. [inch]	ferrule I.D. [mm]		
		code	hose type
3/16	11.6	MC-BX7-03	SAE100R7 / R8
1/4	13.9	MC-BX7-04	
5/16	15.9	MC-BX7-05	SAE100R6 / R7 / R8
3/8	17.5	MC-BX7-06	
1/2	21.3	MC-BX7-08	
5/8	24.8	MC-BX7-10	
3/4	28.2	MC-BX7-12	SAE100R6 / R7
1	34.6	MC-BX7-16	
1		MC-BX8-16	SAE100R8

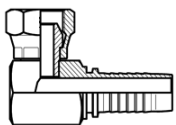
**Note!**  
For thermoplastic and hydraulic rubber hoses with textile braid, properly selected ferrules of L type can be used (see "INDUSTRIAL FITTINGS - clips, clamps, ferrules").



# HIGH PRESSURE - fittings

## Standard fittings - Z type

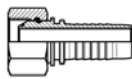
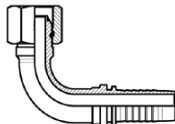
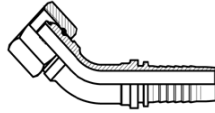
TI-Z STANDARD		BSP thread, 60° cone			
		AGR	DKR	DKR 90	DKR 45
thread size [inch]	hose I.D. [inch]				
		code	code	code	code
1/8	3/16	TI-ZBZ110-02-03	TI-ZBW110-02-03*	TI-ZBW210-02-03	TI-ZBW310-02-03
	1/4	TI-ZBZ110-02-04*	TI-ZBW110-02-04*	TI-ZBW210-02-04	TI-ZBW310-02-04
1/4	3/16	TI-ZBZ110-04-03*	TI-ZBW110-04-03*	TI-ZBW210-04-03*	TI-ZBW310-04-03*
	1/4	TI-ZBZ110-04-04*	TI-ZBW110-04-04*	TI-ZBW210-04-04*	TI-ZBW310-04-04*
	5/16	TI-ZBZ110-04-05	TI-ZBW110-04-05*	TI-ZBW210-04-05	TI-ZBW310-04-05
	3/8	TI-ZBZ110-04-06	TI-ZBW110-04-06	TI-ZBW210-04-06	TI-ZBW310-04-06
3/8	1/4	TI-ZBZ110-06-04*	TI-ZBW110-06-04*	TI-ZBW210-06-04*	TI-ZBW310-06-04*
	5/16	TI-ZBZ110-06-05*	TI-ZBW110-06-05*	TI-ZBW210-06-05*	TI-ZBW310-06-05*
	3/8	TI-ZBZ110-06-06*	TI-ZBW110-06-06*	TI-ZBW210-06-06*	TI-ZBW310-06-06*
	1/2	TI-ZBZ110-06-08	TI-ZBW110-06-08*	TI-ZBW210-06-08	TI-ZBW310-06-08
1/2	1/4	TI-ZBZ110-08-04	TI-ZBW110-08-04	-	-
	5/16	TI-ZBZ110-08-05	TI-ZBW110-08-05	-	-
	3/8	TI-ZBZ110-08-06*	TI-ZBW110-08-06*	TI-ZBW210-08-06*	TI-ZBW310-08-06*
	1/2	TI-ZBZ110-08-08*	TI-ZBW110-08-08*	TI-ZBW210-08-08*	TI-ZBW310-08-08*
	5/8	TI-ZBZ110-08-10	TI-ZBW110-08-10*	TI-ZBW210-08-10	TI-ZBW310-08-10
	3/4	TI-ZBZ110-08-12	TI-ZBW110-08-12	-	-
	-	-	-	-	-
5/8	1/2	-	TI-ZBW110-10-08*	TI-ZBW210-10-08	TI-ZBW310-10-08
	5/8	TI-ZBZ110-10-10*	TI-ZBW110-10-10*	TI-ZBW210-10-10*	TI-ZBW310-10-10*
	3/4	-	TI-ZBW110-10-12	-	-
3/4	1/2	TI-ZBZ110-12-08	TI-ZBW110-12-08*	TI-ZBW210-12-08*	TI-ZBW310-12-08
	5/8	TI-ZBZ110-12-10*	TI-ZBW110-12-10*	TI-ZBW210-12-10*	TI-ZBW310-12-10*
	3/4	TI-ZBZ110-12-12*	TI-ZBW110-12-12*	TI-ZBW210-12-12*	TI-ZBW310-12-12*
	1	TI-ZBZ110-12-16	TI-ZBW110-12-16	-	-
1	3/4	TI-ZBZ110-16-12*	TI-ZBW110-16-12*	TI-ZBW210-16-12*	TI-ZBW310-16-12*
	1	TI-ZBZ110-16-16*	TI-ZBW110-16-16*	TI-ZBW210-16-16*	TI-ZBW310-16-16*
	1.1/4	TI-ZBZ110-16-20	-	-	-
1.1/4	1	TI-ZBZ110-20-16*	TI-ZBW110-20-16*	TI-ZBW210-20-16	TI-ZBW310-20-16
	1.1/4	TI-ZBZ110-20-20*	TI-ZBW110-20-20*	TI-ZBW210-20-20*	TI-ZBW310-20-20*
	1.1/2	TI-ZBZ110-20-24	-	-	-
1.1/2	1.1/4	TI-ZBZ110-24-20*	TI-ZBW110-24-20*	TI-ZBW210-24-20	TI-ZBW310-24-20
	1.1/2	TI-ZBZ110-24-24*	TI-ZBW110-24-24*	TI-ZBW210-24-24*	TI-ZBW310-24-24*
2	1.1/2	-	TI-ZBW110-32-24*	TI-ZBW210-32-24	TI-ZBW310-32-24
	2	TI-ZBZ110-32-32*	TI-ZBW110-32-32*	TI-ZBW210-32-32*	TI-ZBW310-32-32*


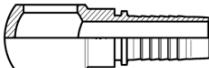

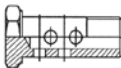
TI-Z STANDARD		BSP thread, 60° cone - COMPACT	
		DKR 90	
thread size [inch]	hose I.D. [inch]		
		code	
1/4	1/4	TI-ZBW410-04-04	
3/8	3/8	TI-ZBW410-06-06	
1/2	1/2	TI-ZBW410-08-08	
3/4	3/4	TI-ZBW410-12-12	

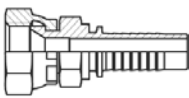
\* - available in AISI 316 steel

# HIGH PRESSURE - fittings

## Standard fittings - Z type

TI-Z STANDARD		BSP thread, 60° cone, O-ring		
		DKOR	DKOR 90	DKOR 45
thread size [inch]	hose I.D. [inch]			
		code	code	code
1/4	1/4	TI-ZBW120-04-04	TI-ZBW220-04-04	TI-ZBW320-04-04
3/8	3/8	TI-ZBW120-06-06	TI-ZBW220-06-06	TI-ZBW320-06-06
1/2	1/2	TI-ZBW120-08-08	TI-ZBW220-08-08	TI-ZBW320-08-08
3/4	3/4	TI-ZBW120-12-12	TI-ZBW220-12-12	TI-ZBW320-12-12
1	1	TI-ZBW120-16-16	TI-ZBW220-16-16	TI-ZBW320-16-16
1.1/4	1.1/4	TI-ZBW120-20-20	TI-ZBW220-20-20	TI-ZBW320-20-20
1.1/2	1.1/2	TI-ZBW120-24-24	TI-ZBW220-24-24	TI-ZBW320-24-24
2	2	TI-ZBW120-32-32	TI-ZBW220-32-32	TI-ZBW320-32-32

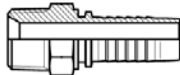

TI-Z STANDARD		BANJO imperial			
		copper washer	RNR	bolt	double bolt
thread size [inch]	hose I.D. [inch]				
		code	code	code	code
1/8	3/16	TI-UM-10-16	TI-ZBB600-02-03	TI-ZBB610-02	TI-ZBB620-02
	1/4		TI-ZBB600-02-04		
1/4	3/16	TI-UM-13-19	TI-ZBB600-04-03	TI-ZBB610-04*	TI-ZBB620-04
	1/4		TI-ZBB600-04-04*		
	5/16		TI-ZBB600-04-05		
	3/8		TI-ZBB600-04-06		
3/8	1/4	TI-UM-17-21	TI-ZBB600-06-04	TI-ZBB610-06*	TI-ZBB620-06
	5/16		TI-ZBB600-06-05*		
	3/8		TI-ZBB600-06-06*		
	1/2		TI-ZBB600-06-08*		
1/2	3/8	TI-UM-21-26	TI-ZBB600-08-06*	TI-ZBB610-08*	TI-ZBB620-08
	1/2		TI-ZBB600-08-08*		
5/8	1/2	TI-UM-24-30	TI-ZBB600-10-08	TI-ZBB610-10	TI-ZBB620-10
	5/8		TI-ZBB600-10-10		
3/4	1/2	TI-UM-27-33	TI-ZBB600-12-08*	TI-ZBB610-12*	TI-ZBB620-12
	5/8		TI-ZBB600-12-10		
	3/4		TI-ZBB600-12-12*		
1	3/4	TI-UM-33-40	TI-ZBB600-16-12	TI-ZBB610-16*	TI-ZBB620-16
	1		TI-ZBB600-16-16*		

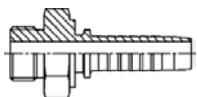
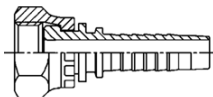
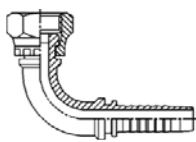
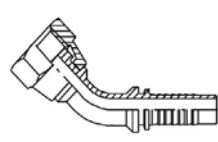
TI-Z STANDARD		BSP thread, reversed cone 60° - TOYOTA
thread size [inch]	hose I.D. [inch]	
		code
1/4	1/4	TI-ZBW150-04-04
3/8	3/8	TI-ZBW150-06-06
1/2	1/2	TI-ZBW150-08-08
3/4	3/4	TI-ZBW150-12-12
1	1	TI-ZBW150-16-16

\* - available in AISI 316 steel

# HIGH PRESSURE - fittings

## Standard fittings - Z type

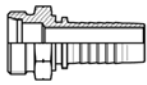
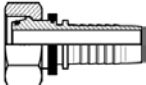
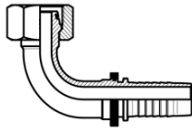
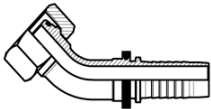
TI-Z STANDARD		BSPT thread, 60° cone	NPT thread, 60° cone
thread size [inch]	hose I.D. [inch]	AGR-K	AGN
			
		code	code
1/8	3/16	TI-ZBZ130-02-03	TI-ZNZ110-02-03*
	1/4	TI-ZBZ130-02-04	TI-ZNZ110-02-04*
1/4	3/16	TI-ZBZ130-04-03*	TI-ZNZ110-04-03*
	1/4	TI-ZBZ130-04-04*	TI-ZNZ110-04-04*
	5/16	TI-ZBZ130-04-05*	TI-ZNZ110-04-05*
	3/8	TI-ZBZ130-04-06*	TI-ZNZ110-04-06
3/8	1/4	TI-ZBZ130-06-04*	TI-ZNZ110-06-04*
	5/16	TI-ZBZ130-06-05*	TI-ZNZ110-06-05*
	3/8	TI-ZBZ130-06-06*	TI-ZNZ110-06-06*
	1/2	TI-ZBZ130-06-08	TI-ZNZ110-06-08
1/2	3/8	TI-ZBZ130-08-06*	TI-ZNZ110-08-06*
	1/2	TI-ZBZ130-08-08*	TI-ZNZ110-08-08*
	5/8	TI-ZBZ130-08-10	TI-ZNZ110-08-10
5/8	5/8	TI-ZBZ130-10-10	TI-ZNZ110-10-10*
3/4	1/2	TI-ZBZ130-12-08*	TI-ZNZ110-12-08*
	5/8	TI-ZBZ130-12-10*	TI-ZNZ110-12-10*
	3/4	TI-ZBZ130-12-12*	TI-ZNZ110-12-12*
1	3/4	TI-ZBZ130-16-12*	TI-ZNZ110-16-12*
	1	TI-ZBZ130-16-16*	TI-ZNZ110-16-16*
1.1/4	1	TI-ZBZ130-20-16*	TI-ZNZ110-20-16*
	1.1/4	TI-ZBZ130-20-20*	TI-ZNZ110-20-20*
	1.1/2	TI-ZBZ130-20-24	-
1.1/2	1.1/4	TI-ZBZ130-24-20*	TI-ZNZ110-24-20*
	1.1/2	TI-ZBZ130-24-24*	TI-ZNZ110-24-24*
2	2	TI-ZBZ130-32-32*	TI-ZNZ110-32-32*

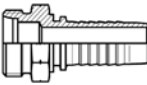
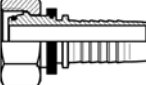
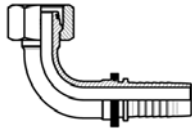
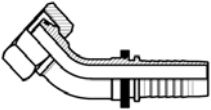
TI-Z STANDARD		BSP thread, flat sealing			
thread size [inch]	hose I.D. [inch]	AGR-F	DKR-F	DKR-F 90	DKR-F 45
					
		code	code	code	code
1/4	1/4	TI-ZBZ140-04-04*	TI-ZBW140-04-04*	TI-ZBW240-04-04	TI-ZBW340-04-04
3/8	1/4	TI-ZBZ140-06-04	TI-ZBW140-06-04*	-	-
	5/16	TI-ZBZ140-06-05*	TI-ZBW140-06-05*	-	-
	3/8	TI-ZBZ140-06-06*	TI-ZBW140-06-06*	TI-ZBW240-06-06	TI-ZBW340-06-06
1/2	5/16	TI-ZBZ140-08-05	-	-	-
	3/8	TI-ZBZ140-08-06*	TI-ZBW140-08-06*	-	-
	1/2	TI-ZBZ140-08-08*	TI-ZBW140-08-08*	TI-ZBW240-08-08	TI-ZBW340-08-08
5/8	1/2	-	TI-ZBW140-10-08	-	-
	5/8	TI-ZBZ140-10-10*	TI-ZBW140-10-10	TI-ZBW240-10-10	TI-ZBW340-10-10
3/4	1/2	TI-ZBZ140-12-08	TI-ZBW140-12-08*	-	-
	5/8	TI-ZBZ140-12-10	TI-ZBW140-12-10*	-	-
	3/4	TI-ZBZ140-12-12*	TI-ZBW140-12-12*	TI-ZBW240-12-12	TI-ZBW340-12-12
1	3/4	TI-ZBZ140-16-12*	TI-ZBW140-16-12	-	-
	1	TI-ZBZ140-16-16*	TI-ZBW140-16-16*	TI-ZBW240-16-16	TI-ZBW340-16-16
1.1/4	1.1/4	-	TI-ZBW140-20-20*	TI-ZBW240-20-20	TI-ZBW340-20-20
1.1/2	1.1/2	-	TI-ZBW140-24-24*	-	-
2	2	-	TI-ZBW140-32-32*	-	-

\* - available in AISI 316 steel

# HIGH PRESSURE - fittings

## Standard fittings - Z type

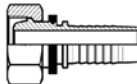
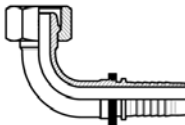
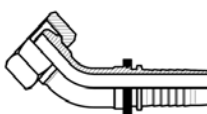
TI-Z STANDARD		Metric thread, 24° cone, O-ring, light duty			
thread size [mm]	hose I.D. [inch]	CEL	DKOL	DKOL 90	DKOL 45
					
		code	code	code	code
M12x1.5	3/16	TI-ZMZ111-12-03*	TI-ZMW121-12-03*	TI-ZMW221-12-03	TI-ZMW321-12-03
	1/4	TI-ZMZ111-12-04*	TI-ZMW121-12-04*	TI-ZMW221-12-04*	TI-ZMW321-12-04*
M14x1.5	3/16	-	TI-ZMW121-14-03	TI-ZMW221-14-03	TI-ZMW321-14-03
	1/4	TI-ZMZ111-14-04*	TI-ZMW121-14-04*	TI-ZMW221-14-04*	TI-ZMW321-14-04*
M16x1.5	1/4	TI-ZMZ111-16-04*	TI-ZMW121-16-04*	TI-ZMW221-16-04*	TI-ZMW321-16-04*
	5/16	TI-ZMZ111-16-05*	TI-ZMW121-16-05*	TI-ZMW221-16-05*	TI-ZMW321-16-05*
	3/8	TI-ZMZ111-16-06*	TI-ZMW121-16-06*	TI-ZMW221-16-06*	TI-ZMW321-16-06*
M18x1.5	1/4	TI-ZMZ111-18-04*	TI-ZMW121-18-04*	TI-ZMW221-18-04	TI-ZMW321-18-04
	5/16	TI-ZMZ111-18-05*	TI-ZMW121-18-05*	TI-ZMW221-18-05*	TI-ZMW321-18-05
	3/8	TI-ZMZ111-18-06*	TI-ZMW121-18-06*	TI-ZMW221-18-06*	TI-ZMW321-18-06*
M22x1.5	3/8	TI-ZMZ111-22-06*	TI-ZMW121-22-06*	TI-ZMW221-22-06*	TI-ZMW321-22-06
	1/2	TI-ZMZ111-22-08*	TI-ZMW121-22-08*	TI-ZMW221-22-08*	TI-ZMW321-22-08*
M26x1.5	1/2	TI-ZMZ111-26-08*	TI-ZMW121-26-08*	TI-ZMW221-26-08	TI-ZMW321-26-08
	5/8	TI-ZMZ111-26-10*	TI-ZMW121-26-10*	TI-ZMW221-26-10*	TI-ZMW321-26-10*
M27x2	5/8	TI-ZMZ111-27-10*	TI-ZMW121-27-10*	TI-ZMW221-27-10*	TI-ZMW321-27-10*
M30x2	5/8	TI-ZMZ111-30-10	TI-ZMW121-30-10	TI-ZMW221-30-10	TI-ZMW321-30-10
	3/4	TI-ZMZ111-30-12*	TI-ZMW121-30-12*	TI-ZMW221-30-12*	TI-ZMW321-30-12*
M36x2	1	TI-ZMZ111-36-16*	TI-ZMW121-36-16*	TI-ZMW221-36-16*	TI-ZMW321-36-16*
M45x2	1.1/4	TI-ZMZ111-45-20*	TI-ZMW121-45-20*	TI-ZMW221-45-20*	TI-ZMW321-45-20*
M52x2	1.1/2	TI-ZMZ111-52-24*	TI-ZMW121-52-24*	TI-ZMW221-52-24*	TI-ZMW321-52-24*

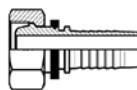
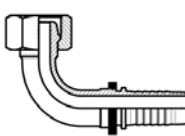
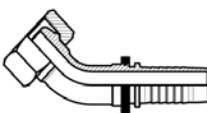
TI-Z STANDARD		Metric thread, 24° cone, O-ring, heavy duty			
thread size [mm]	hose I.D. [inch]	CES	DKOS	DKOS 90	DKOS 45
					
		code	code	code	code
M14x1.5	3/16	-	TI-ZMW122-14-03	TI-ZMW222-14-03	TI-ZMW322-14-03
	1/4	TI-ZMZ112-14-04	TI-ZMW122-14-04	TI-ZMW222-14-04*	TI-ZMW322-14-04*
M16x1.5	3/16	-	TI-ZMW122-16-03	TI-ZMW222-16-03	TI-ZMW322-16-03
	1/4	TI-ZMZ112-16-04*	TI-ZMW122-16-04*	TI-ZMW222-16-04*	TI-ZMW322-16-04*
M18x1.5	1/4	TI-ZMZ112-18-04*	TI-ZMW122-18-04*	TI-ZMW222-18-04*	TI-ZMW322-18-04*
	5/16	TI-ZMZ112-18-05*	TI-ZMW122-18-05	TI-ZMW222-18-05	TI-ZMW322-18-05
	3/8	TI-ZMZ112-18-06*	TI-ZMW122-18-06	TI-ZMW222-18-06	TI-ZMW322-18-06
M20x1.5	1/4	TI-ZMZ112-20-04	TI-ZMW122-20-04	TI-ZMW222-20-04	TI-ZMW322-20-04
	5/16	TI-ZMZ112-20-05*	TI-ZMW122-20-05*	TI-ZMW222-20-05*	TI-ZMW322-20-05*
	3/8	TI-ZMZ112-20-06*	TI-ZMW122-20-06*	TI-ZMW222-20-06*	TI-ZMW322-20-06*
M22x1.5	3/8	TI-ZMZ112-22-06*	TI-ZMW122-22-06*	TI-ZMW222-22-06*	TI-ZMW322-22-06*
	1/2	TI-ZMZ112-22-08*	TI-ZMW122-22-08	TI-ZMW222-22-08	TI-ZMW322-22-08
M24x1.5	1/2	TI-ZMZ112-24-08*	TI-ZMW122-24-08*	TI-ZMW222-24-08*	TI-ZMW322-24-08*
M30x2	5/8	TI-ZMZ112-30-10*	TI-ZMW122-30-10*	TI-ZMW222-30-10*	TI-ZMW322-30-10*
	3/4	TI-ZMZ112-30-12*	TI-ZMW122-30-12*	TI-ZMW222-30-12*	TI-ZMW322-30-12*
M36x2	3/4	TI-ZMZ112-36-12*	TI-ZMW122-36-12*	TI-ZMW222-36-12*	TI-ZMW322-36-12*
	1	TI-ZMZ112-36-16*	TI-ZMW122-36-16*	TI-ZMW222-36-16*	TI-ZMW322-36-16*
M42x2	1	TI-ZMZ112-42-16*	TI-ZMW122-42-16*	TI-ZMW222-42-16*	TI-ZMW322-42-16*
	1.1/4	TI-ZMZ112-42-20	TI-ZMW122-42-20	TI-ZMW222-42-20	TI-ZMW322-42-20
M52x2	1.1/4	TI-ZMZ112-52-20*	TI-ZMW122-52-20*	TI-ZMW222-52-20*	TI-ZMW322-52-20*
	1.1/2	TI-ZMZ112-52-24*	TI-ZMW122-52-24	TI-ZMW222-52-24	TI-ZMW322-52-24

\* - available in AISI 316 steel

# HIGH PRESSURE - fittings

## Standard fittings - Z type

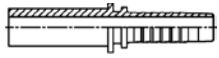
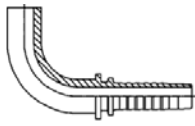
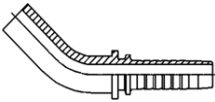
TI-Z STANDARD		Metric thread, 24°/60° cone, light duty		
		DKL	DKL 90	DKL 45
thread size [mm]	hose I.D. [inch]			
		code	code	code
M12x1.5	1/4	TI-ZMW111-12-04*	TI-ZMW211-12-04*	TI-ZMW311-12-04*
M14x1.5	1/4	TI-ZMW111-14-04*	TI-ZMW211-14-04*	TI-ZMW311-14-04*
M16x1.5	1/4	TI-ZMW111-16-04	TI-ZMW211-16-04	TI-ZMW311-16-04
	5/16	TI-ZMW111-16-05*	TI-ZMW211-16-05*	TI-ZMW311-16-05*
	3/8	TI-ZMW111-16-06	TI-ZMW211-16-06	TI-ZMW311-16-06
M18x1.5	5/16	TI-ZMW111-18-05	TI-ZMW211-18-05	TI-ZMW311-18-05
	3/8	TI-ZMW111-18-06*	TI-ZMW211-18-06*	TI-ZMW311-18-06*
M22x1.5	3/8	TI-ZMW111-22-06	TI-ZMW211-22-06	TI-ZMW311-22-06
	1/2	TI-ZMW111-22-08*	TI-ZMW211-22-08*	TI-ZMW311-22-08*
	1/2	TI-ZMW111-22-16L-08	TI-ZMW211-22-16L-08	TI-ZMW311-22-16L-08
M26x1.5	5/8	TI-ZMW111-26-10*	TI-ZMW211-26-10*	TI-ZMW311-26-10*
M27x1.5	5/8	TI-ZMW111-27X1.5-10	TI-ZMW211-27X1.5-10	-
M27x2	5/8	TI-ZMW111-27-10	TI-ZMW211-27-10	TI-ZMW311-27-10
M30x2	3/4	TI-ZMW111-30-12*	TI-ZMW211-30-12*	TI-ZMW311-30-12*
M33x1.5	3/4	TI-ZMW111-33X1.5-12	TI-ZMW211-33X1.5-12	-
M33x2	3/4	TI-ZMW111-33-12	TI-ZMW211-33-12	
M36x2	1	TI-ZMW111-36-16*	TI-ZMW211-36-16*	TI-ZMW311-36-16*
M45x2	1.1/4	TI-ZMW111-45-20*	TI-ZMW211-45-20*	TI-ZMW311-45-20*
M52x2	1.1/2	TI-ZMW111-52-24*	TI-ZMW211-52-24*	TI-ZMW311-52-24*

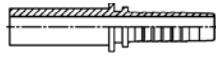
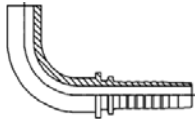
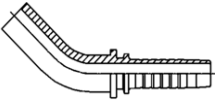
TI-Z STANDARD		Metric thread, 24°/60° cone, heavy duty		
		DKS	DKS 90	DKS 45
thread size [mm]	hose I.D. [inch]			
		code	code	code
M18x1.5	1/4	TI-ZMW112-18-04*	TI-ZMW212-18-04*	TI-ZMW312-18-04*
M20x1.5	5/16	TI-ZMW112-20-05*	TI-ZMW212-20-05*	TI-ZMW312-20-05*
M22x1.5	3/8	TI-ZMW112-22-06*	TI-ZMW212-22-06*	TI-ZMW312-22-06*
M24x1.5	1/2	TI-ZMW112-24-08*	TI-ZMW212-24-08*	TI-ZMW312-24-08*
M30x2	5/8	TI-ZMW112-30-10*	TI-ZMW212-30-10*	TI-ZMW312-30-10*
M36x2	3/4	TI-ZMW112-36-12*	TI-ZMW212-36-12*	TI-ZMW312-36-12*
M42x2	1	TI-ZMW112-42-16*	TI-ZMW212-42-16*	TI-ZMW312-42-16*
M52x2	1.1/4	TI-ZMW112-52-20*	TI-ZMW212-52-20*	TI-ZMW312-52-20*

\* - available in AISI 316 steel

# HIGH PRESSURE - fittings

## Standard fittings - Z type


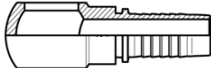

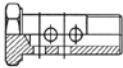
TI-Z STANDARD		Metric standpipe, light duty		
		BEL	BEL 90	BEL 45
pipe O.D. [mm]	hose I.D. [inch]			
		code	code	code
6	3/16	TI-ZMR111-06-03*	TI-ZMR211-06-03*	TI-ZMR311-06-03*
6	1/4	TI-ZMR111-06-04*	TI-ZMR211-06-04*	TI-ZMR311-06-04*
8	1/4	TI-ZMR111-08-04*	TI-ZMR211-08-04*	TI-ZMR311-08-04*
8	5/16	TI-ZMR111-08-05*	TI-ZMR211-08-05*	TI-ZMR311-08-05*
8	3/8	TI-ZMR111-08-06*	-	-
10	5/16	TI-ZMR111-10-05*	TI-ZMR211-10-05*	TI-ZMR311-10-05*
10	3/8	TI-ZMR111-10-06*	TI-ZMR211-10-06*	TI-ZMR311-10-06*
12	3/8	TI-ZMR111-12-06*	TI-ZMR211-12-06*	TI-ZMR311-12-06*
12	1/2	TI-ZMR111-12-08*	TI-ZMR211-12-08*	TI-ZMR311-12-08*
15	3/8	TI-ZMR111-15-06*	TI-ZMR211-15-06*	TI-ZMR311-15-06*
15	1/2	TI-ZMR111-15-08*	TI-ZMR211-15-08*	TI-ZMR311-15-08*
18	1/2	TI-ZMR111-18-08*	TI-ZMR211-18-08*	TI-ZMR311-18-08*
18	5/8	TI-ZMR111-18-10*	TI-ZMR211-18-10*	TI-ZMR311-18-10*
18	3/4	TI-ZMR111-18-12*	-	-
22	5/8	TI-ZMR111-22-10*	TI-ZMR211-22-10*	TI-ZMR311-22-10*
22	3/4	TI-ZMR111-22-12*	TI-ZMR211-22-12*	TI-ZMR311-22-12*
28	1	TI-ZMR111-28-16*	TI-ZMR211-28-16*	TI-ZMR311-28-16*
35	1.1/4	TI-ZMR111-35-20*	TI-ZMR211-35-20*	TI-ZMR311-35-20*
42	1.1/2	TI-ZMR111-42-24*	TI-ZMR211-42-24*	TI-ZMR311-42-24*

TI-Z STANDARD		Metric standpipe, heavy duty		
		BES	BES 90	BES 45
pipe O.D. [mm]	hose I.D. [inch]			
		code	code	code
8	1/4	TI-ZMR112-08-04*	TI-ZMR212-08-04*	TI-ZMR312-08-04*
10	1/4	TI-ZMR112-10-04*	TI-ZMR212-10-04*	TI-ZMR312-10-04*
12	1/4	TI-ZMR112-12-04*	TI-ZMR212-12-04*	TI-ZMR312-12-04*
12	5/16	TI-ZMR112-12-05*	TI-ZMR212-12-05*	TI-ZMR312-12-05*
14	3/8	TI-ZMR112-14-06*	TI-ZMR212-14-06*	TI-ZMR312-14-06*
14	1/2	TI-ZMR112-14-08*	TI-ZMR212-14-08*	TI-ZMR312-14-08*
16	1/2	TI-ZMR112-16-08*	TI-ZMR212-16-08*	TI-ZMR312-16-08*
20	5/8	TI-ZMR112-20-10*	TI-ZMR212-20-10*	TI-ZMR312-20-10*
20	3/4	TI-ZMR112-20-12*	TI-ZMR212-20-12*	TI-ZMR312-20-12*
25	3/4	TI-ZMR112-25-12*	TI-ZMR212-25-12*	TI-ZMR312-25-12*
25	1	TI-ZMR112-25-16*	TI-ZMR212-25-16*	TI-ZMR312-25-16*
30	1	TI-ZMR112-30-16*	TI-ZMR212-30-16*	TI-ZMR312-30-16*
38	1.1/4	TI-ZMR112-38-20*	TI-ZMR212-38-20*	TI-ZMR312-38-20*
38	1.1/2	TI-ZMR112-38-24	TI-ZMR212-38-24	TI-ZMR312-38-24

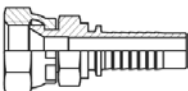
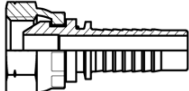
\* - available in AISI 316 steel

# HIGH PRESSURE - fittings

## Standard fittings - Z type



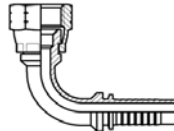
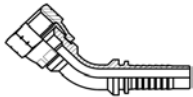
TI-Z STANDARD		BANJO metric			
		copper washer	RNM	bolt	double bolt
thread size [mm]	hose I.D. [inch]				
		code	code	code	code
M10	3/16	TI-UM-10X16	TI-ZMB600-10-03	TI-ZMB610-10X1	TI-ZMB620-10X1
	1/4		TI-ZMB600-10-04		
M12	3/16	TI-UM-12X18	TI-ZMB600-12-03	TI-ZMB610-12X1.5*	TI-ZMB620-12X1.5*
	1/4		TI-ZMB600-12-04*		
	5/16		TI-ZMB600-12-05		
M14	3/16	TI-UM-14X20	TI-ZMB600-14-03	TI-ZMB610-14X1.5*	TI-ZMB620-14X1.5*
	1/4		TI-ZMB600-14-04*		
	5/16		TI-ZMB600-14-05		
	3/8		TI-ZMB600-14-06*		
M16	1/4	TI-UM-16X22	TI-ZMB600-16-04	TI-ZMB610-16X1.5*	TI-ZMB620-16X1.5*
	5/16		TI-ZMB600-16-05*		
	3/8		TI-ZMB600-16-06*		
M18	5/16	TI-UM-16X23	TI-ZMB600-18-05	TI-ZMB610-18X1.5*	TI-ZMB620-18X1.5*
	3/8		TI-ZMB600-18-06*		
	1/2		TI-ZMB600-18-08*		
M20	3/8	TI-UM-20X26	TI-ZMB600-20-06	TI-ZMB610-20X1.5	-
	1/2		TI-ZMB600-20-08*		
M22	1/2	TI-UM-22X27	TI-ZMB600-22-08*	TI-ZMB610-22X1.5*	TI-ZMB620-22X1.5*
	5/8		TI-ZMB600-22-10		
M26	5/8	TI-UM-26X33	TI-ZMB600-26-10	TI-ZMB610-26X1.5*	-
	3/4		TI-ZMB600-26-12*		
M30	3/4	TI-UM-30X36	TI-ZMB600-30-12*	TI-ZMB610-30X1.5*	-
	1		TI-ZMB600-30-16		

\* - available in AISI 316 steel

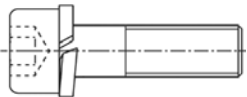
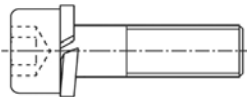
TI-Z STANDARD		Metric thread, reversed cone 60°	
		KOMATSU	DKM
thread size [inch]	hose I.D. [inch]		
		code	code
M10x1	1/4	-	TI-ZMW160-10X1-04
M12x1.5	1/4	-	TI-ZMW160-12-04
M14x1.5	1/4	TI-ZMW150-14-04	TI-ZMW160-14-04
M16x1.5	1/4	-	TI-ZMW160-16-04
	3/8	TI-ZMW150-16-06	-
M18x1.5	1/4	-	TI-ZMW160-18-04
	5/16	-	TI-ZMW160-18-05
	3/8	TI-ZMW150-18-06	-
M20x1.5	3/8	-	TI-ZMW160-20-06
M22x1.5	3/8	-	TI-ZMW160-22-06
	1/2	TI-ZMW150-22-08	-
M24x1.5	1/2	-	TI-ZMW160-24-08
	5/8	TI-ZMW150-24-10	-
M26x1.5	5/8	-	TI-ZMW160-26-10
M30x1.5	3/4	TI-ZMW150-30-12	TI-ZMW160-30-12
M33x1.5	1	TI-ZMW150-33-16	-
M36x1.5	1.1/4	TI-ZMW150-36-20	-
M38x1.5	1	-	TI-ZMW160-38-16
M42x1.5	1.1/2	TI-ZMW150-42-24	-
M45x1.5	1.1/4	-	TI-ZMW160-45-20

# HIGH PRESSURE - fittings

## Standard fittings - Z type

TI-Z STANDARD		JIC thread UNF, 74° cone			
		AGJ	DKJ	DKJ 90	DKJ 45
thread size [inch]	hose I.D. [inch]				
		code	code	code	code
7/16-20	3/16	TI-ZJZ110-07-03*	TI-ZJW110-07-03*	TI-ZJW210-07-03*	TI-ZJW310-07-03*
	1/4	TI-ZJZ110-07-04*	TI-ZJW110-07-04*	TI-ZJW210-07-04*	TI-ZJW310-07-04*
1/2-20	3/16	TI-ZJZ110-08-03*	TI-ZJW110-08-03*	TI-ZJW210-08-03	-
	1/4	TI-ZJZ110-08-04*	TI-ZJW110-08-04*	TI-ZJW210-08-04*	TI-ZJW310-08-04*
	5/16	TI-ZJZ110-08-05*	TI-ZJW110-08-05*	TI-ZJW210-08-05*	TI-ZJW310-08-05*
9/16-18	1/4	TI-ZJZ110-09-04*	TI-ZJW110-09-04*	TI-ZJW210-09-04*	TI-ZJW310-09-04*
	5/16	TI-ZJZ110-09-05*	TI-ZJW110-09-05*	TI-ZJW210-09-05*	TI-ZJW310-09-05*
	3/8	TI-ZJZ110-09-06*	TI-ZJW110-09-06*	TI-ZJW210-09-06*	TI-ZJW310-09-06*
5/8-18	5/16	TI-ZJZ110-10-05	TI-ZJW110-10-05	-	-
	3/8	TI-ZJZ110-10-06	TI-ZJW110-10-06	-	-
3/4-16	5/16	TI-ZJZ110-12-05	TI-ZJW110-12-05	TI-ZJW210-12-05	TI-ZJW310-12-05
	3/8	TI-ZJZ110-12-06*	TI-ZJW110-12-06*	TI-ZJW210-12-06*	TI-ZJW310-12-06*
	1/2	TI-ZJZ110-12-08*	TI-ZJW110-12-08*	TI-ZJW210-12-08*	TI-ZJW310-12-08*
7/8-14	3/8	TI-ZJZ110-14-06*	TI-ZJW110-14-06*	TI-ZJW210-14-06*	TI-ZJW310-14-06*
	1/2	TI-ZJZ110-14-08*	TI-ZJW110-14-08*	TI-ZJW210-14-08*	TI-ZJW310-14-08*
	5/8	TI-ZJZ110-14-10*	TI-ZJW110-14-10*	TI-ZJW210-14-10*	TI-ZJW310-14-10*
	3/4	-	TI-ZJW110-14-12	-	-
1.1/16-12	1/2	TI-ZJZ110-17-08*	TI-ZJW110-17-08*	TI-ZJW210-17-08	TI-ZJW310-17-08
	5/8	TI-ZJZ110-17-10*	TI-ZJW110-17-10*	TI-ZJW210-17-10*	TI-ZJW310-17-10*
	3/4	TI-ZJZ110-17-12*	TI-ZJW110-17-12*	TI-ZJW210-17-12*	TI-ZJW310-17-12*
	1	TI-ZJZ110-17-16*	TI-ZJW110-17-16*	-	-
1.3/16-12	3/4	TI-ZJZ110-19-12	TI-ZJW110-19-12	TI-ZJW210-19-12	TI-ZJW310-19-12
	1	TI-ZJZ110-19-16	TI-ZJW110-19-16	-	-
1.5/16-12	5/8	TI-ZJZ110-21-10	TI-ZJW110-21-10	-	-
	3/4	TI-ZJZ110-21-12*	TI-ZJW110-21-12*	TI-ZJW210-21-12	-
	1	TI-ZJZ110-21-16*	TI-ZJW110-21-16*	TI-ZJW210-21-16*	TI-ZJW310-21-16*
1.5/8-12	1	TI-ZJZ110-26-16*	TI-ZJW110-26-16*	TI-ZJW210-26-16	TI-ZJW310-26-16
	1.1/4	TI-ZJZ110-26-20*	TI-ZJW110-26-20*	TI-ZJW210-26-20*	TI-ZJW310-26-20*
1.7/8-12	1.1/4	TI-ZJZ110-30-20	TI-ZJW110-30-20	TI-ZJW210-30-20	TI-ZJW310-30-20
	1.1/2	TI-ZJZ110-30-24*	TI-ZJW110-30-24*	TI-ZJW210-30-24*	TI-ZJW310-30-24*
2.1/2-12	2	TI-ZJZ110-40-32*	TI-ZJW110-40-32*	TI-ZJW210-40-32*	TI-ZJW310-40-32*



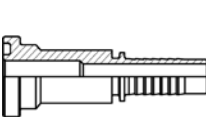
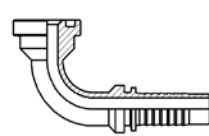
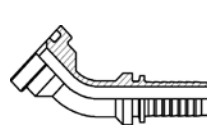
\* - available in AISI 316 steel

TI-Z STANDARD	Bolts with washer for SAE flanges, DIN 912, 12.9 grade, black, oil finish			
	for 3000 series		for 6000 series	
flange size [inch]				
	code	size [mm]	code	size [mm]
1/2	TI-ZSK-08X25	M8x25	TI-ZSK-08X30	M8x30
3/4	TI-ZSK-10X30	M10x30	TI-ZSK-10X35	M10x35
1			TI-ZSK-12X40	M12x40
1.1/4			TI-ZSK-14X50	M14x50
1.1/2	TI-ZSK-12X35	M12x35	TI-ZSK-16X55	M16x55
2			TI-ZSK-20X70	M20x70
2.1/2	TI-ZSK-12X40	M12x40	TI-ZSK-24X90	M24x90





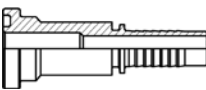
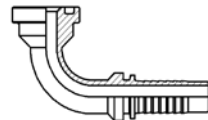
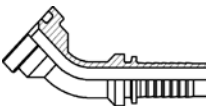
# HIGH PRESSURE - fittings

## Standard fittings - Z type

TI-Z STANDARD		SAE 3000 flange				
		split	monoblock	SFL	SFL 90	SFL 45
flange size [inch]	hose I.D. [inch]					
		code	code	code	code	code
1/2	1/2	TI-ZSK611-08*	TI-ZSK621-08*	TI-ZSK111-08-08*	TI-ZSK211-08-08*	TI-ZSK311-08-08*
	5/8			TI-ZSK111-08-10	TI-ZSK211-08-10	TI-ZSK311-08-10
5/8	1/2	-	-	TI-ZSK111-10-08K**	TI-ZSK211-10-08K**	TI-ZSK311-10-08K**
	5/8			TI-ZSK111-10-10K**	TI-ZSK211-10-10K**	TI-ZSK311-10-10K**
3/4	1/2	TI-ZSK611-12*	TI-ZSK621-12*	TI-ZSK111-12-08*	TI-ZSK211-12-08*	TI-ZSK311-12-08*
	5/8			TI-ZSK111-12-10*	TI-ZSK211-12-10*	TI-ZSK311-12-10*
	3/4			TI-ZSK111-12-12*	TI-ZSK211-12-12*	TI-ZSK311-12-12*
1	3/4	TI-ZSK611-16*	TI-ZSK621-16*	TI-ZSK111-16-12*	TI-ZSK211-16-12*	TI-ZSK311-16-12*
	1			TI-ZSK111-16-16*	TI-ZSK211-16-16*	TI-ZSK311-16-16*
1.1/4	1	TI-ZSK611-20*	TI-ZSK621-20*	TI-ZSK111-20-16*	TI-ZSK211-20-16*	TI-ZSK311-20-16*
	1.1/4			TI-ZSK111-20-20*	TI-ZSK211-20-20*	TI-ZSK311-20-20*
1.1/2	1.1/4	TI-ZSK611-24*	TI-ZSK621-24*	TI-ZSK111-24-20*	TI-ZSK211-24-20*	TI-ZSK311-24-20*
	1.1/2			TI-ZSK111-24-24*	TI-ZSK211-24-24*	TI-ZSK311-24-24*
2	1.1/2	TI-ZSK611-32*	TI-ZSK621-32*	TI-ZSK111-32-24*	TI-ZSK211-32-24*	TI-ZSK311-32-24*
	2			TI-ZSK111-32-32*	TI-ZSK211-32-32*	TI-ZSK311-32-32*
2.1/2	2	TI-ZSK611-40	TI-ZSK621-40	TI-ZSK111-40-32	TI-ZSK211-40-32	TI-ZSK311-40-32

\* - available in AISI 316 steel

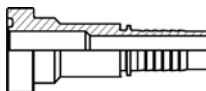
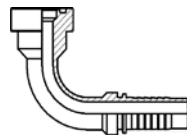
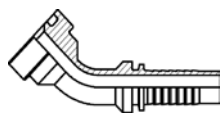
\*\* - KOMATSU

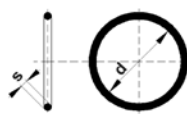
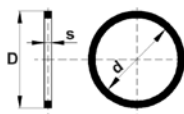
TI-Z STANDARD		SAE 6000 flange				
		split	monoblock	SFS	SFS 90	SFS 45
flange size [inch]	hose I.D. [inch]					
		code	code	code	code	code
1/2	1/2	TI-ZSK612-08*	TI-ZSK622-08*	TI-ZSK112-08-08*	TI-ZSK212-08-08*	TI-ZSK312-08-08*
	5/8			TI-ZSK112-08-10	TI-ZSK212-08-10	TI-ZSK312-08-10
	3/4			TI-ZSK112-08-12	TI-ZSK212-08-12	TI-ZSK312-08-12
3/4	1/2	TI-ZSK612-12*	TI-ZSK622-12*	TI-ZSK112-12-08*	TI-ZSK212-12-08*	TI-ZSK312-12-08*
	5/8			TI-ZSK112-12-10*	TI-ZSK212-12-10*	TI-ZSK312-12-10*
	3/4			TI-ZSK112-12-12*	TI-ZSK212-12-12*	TI-ZSK312-12-12*
	1			TI-ZSK112-12-16	TI-ZSK212-12-16	TI-ZSK312-12-16
1	3/4	TI-ZSK612-16*	TI-ZSK622-16*	TI-ZSK112-16-12*	TI-ZSK212-16-12*	TI-ZSK312-16-12*
	1			TI-ZSK112-16-16*	TI-ZSK212-16-16*	TI-ZSK312-16-16*
1.1/4	1	TI-ZSK612-20*	TI-ZSK622-20*	TI-ZSK112-20-16*	TI-ZSK212-20-16*	TI-ZSK312-20-16*
	1.1/4			TI-ZSK112-20-20*	TI-ZSK212-20-20*	TI-ZSK312-20-20*
1.1/2	1.1/4	TI-ZSK612-24*	TI-ZSK622-24*	TI-ZSK112-24-20*	TI-ZSK212-24-20*	TI-ZSK312-24-20*
	1.1/2			TI-ZSK112-24-24*	TI-ZSK212-24-24*	TI-ZSK312-24-24*
2	1.1/2	TI-ZSK612-32*	TI-ZSK622-32*	TI-ZSK112-32-24*	TI-ZSK212-32-24*	TI-ZSK312-32-24*
	2			TI-ZSK112-32-32*	TI-ZSK212-32-32*	TI-ZSK312-32-32*

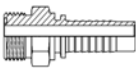
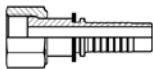
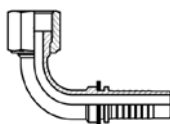
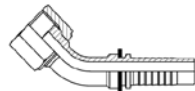
\* - available in AISI 316 steel

# HIGH PRESSURE - fittings

## Standard fittings - Z type

TI-Z STANDARD		SUPER CAT flange		
		SFC	SFC 90	SFC 45
flange size [inch]	hose I.D. [inch]			
		code	code	code
3/4	3/4	TI-ZSK113-12-12	TI-ZSK213-12-12	TI-ZSK313-12-12
1	3/4	TI-ZSK113-16-12	TI-ZSK213-16-12	TI-ZSK313-16-12
	1	TI-ZSK113-16-16	TI-ZSK213-16-16	TI-ZSK313-16-16
1.1/4	1	TI-ZSK113-20-16	TI-ZSK213-20-16	TI-ZSK313-20-16
	1.1/4	TI-ZSK113-20-20	TI-ZSK213-20-20	TI-ZSK313-20-20
1.1/2	1.1/4	TI-ZSK113-24-20	TI-ZSK213-24-20	TI-ZSK313-24-20
	1.1/2	TI-ZSK113-24-24	TI-ZSK213-24-24	TI-ZSK313-24-24

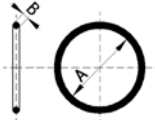
TI-USK	SAE flange seal			
	O-ring (NBR)		flat (polyurethane)	
flange size [inch]				
	code	d x s [mm]	code	D x d x s [mm]
1/2	TI-USK110-08	18.64 x 3.53	TI-USK110-08-PU	25.40 x 17.02 x 2.79
3/4	TI-USK110-12	24.99 x 3.53	TI-USK110-12-PU	31.72 x 23.36 x 2.79
1	TI-USK110-16	32.92 x 3.53	TI-USK110-16-PU	39.62 x 31.24 x 2.79
1.1/4	TI-USK110-20	37.69 x 3.53	TI-USK110-20-PU	44.45 x 36.07 x 2.79
1.1/2	TI-USK110-24	47.22 x 3.53	TI-USK110-24-PU	53.98 x 45.34 x 2.79
2	TI-USK110-32	56.75 x 3.53	TI-USK110-32-PU	63.50 x 54.86 x 2.79

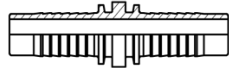
TI-Z STANDARD		ORFS UNF thread, flat sealing			
		AGO	DKO	DKO 90	DKO 45
thread size [inch]	hose I.D. [inch]				
		code	code	code	code
9/16-18	1/4	TI-ZOZ110-09-04*	TI-ZOW110-09-04*	TI-ZOW210-09-04*	TI-ZOW310-09-04*
	5/16	-	TI-ZOW110-09-05	TI-ZOW210-09-05	TI-ZOW310-09-05
	3/8	-	TI-ZOW110-09-06	TI-ZOW210-09-06	TI-ZOW310-09-06
11/16-16	1/4	TI-ZOZ110-11-04*	TI-ZOW110-11-04*	TI-ZOW210-11-04*	TI-ZOW310-11-04*
	5/16	TI-ZOZ110-11-05*	TI-ZOW110-11-05*	TI-ZOW210-11-05*	TI-ZOW310-11-05*
	3/8	TI-ZOZ110-11-06*	TI-ZOW110-11-06*	TI-ZOW210-11-06*	TI-ZOW310-11-06*
13/16-16	3/8	TI-ZOZ110-13-06*	TI-ZOW110-13-06*	TI-ZOW210-13-06*	TI-ZOW310-13-06*
	1/2	TI-ZOZ110-13-08*	TI-ZOW110-13-08*	TI-ZOW210-13-08*	TI-ZOW310-13-08*
1-14	1/2	TI-ZOZ110-16-08*	TI-ZOW110-16-08*	TI-ZOW210-16-08*	TI-ZOW310-16-08*
	5/8	TI-ZOZ110-16-10*	TI-ZOW110-16-10*	TI-ZOW210-16-10*	TI-ZOW310-16-10*
1.3/16-12	1/2	-	TI-ZOW110-19-08*	-	-
	5/8	TI-ZOZ110-19-10	TI-ZOW110-19-10	TI-ZOW210-19-10	TI-ZOW310-19-10
	3/4	TI-ZOZ110-19-12*	TI-ZOW110-19-12*	TI-ZOW210-19-12*	TI-ZOW310-19-12*
1.7/16-12	3/4	-	TI-ZOW110-23-12*	TI-ZOW210-23-12*	TI-ZOW310-23-12*
	1	TI-ZOZ110-23-16*	TI-ZOW110-23-16*	TI-ZOW210-23-16*	TI-ZOW310-23-16*
1.11/16-12	1.1/4	TI-ZOZ110-27-20*	TI-ZOW110-27-20*	TI-ZOW210-27-20*	TI-ZOW310-27-20*
2-12	1.1/2	TI-ZOZ110-32-24*	TI-ZOW110-32-24*	TI-ZOW210-32-24*	TI-ZOW310-32-24*

\* - available in AISI 316 steel

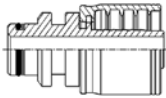
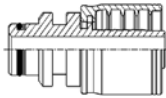
# HIGH PRESSURE - fittings

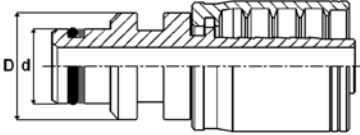
## Standard fittings - Z type

TI-Z STANDARD	Seals for ORFS fittings - O-ring (NBR90)	
thread size [inch]		
	code	A x B [mm]
9/16-18	TI-UOZ110-09	7.65 x 1.78
11/16-16	TI-UOZ110-11	9.25 x 1.78
13/16-16	TI-UOZ110-13	12.42 x 1.78
1-14	TI-UOZ110-16	15.60 x 1.78
1.3/16-12	TI-UOZ110-19	18.77 x 1.78
1.7/16-12	TI-UOZ110-23	23.52 x 1.78
1.11/16-12	TI-UOZ110-27	29.87 x 1.78
2-12	TI-UOZ110-32	37.82 x 1.78

TI-Z STANDARD	Connector
hose I.D. [inch]	
	code
3/16	TI-ZLL110-03-03
1/4	TI-ZLL110-04-04*
5/16	TI-ZLL110-05-05*
3/8	TI-ZLL110-06-06*
1/2	TI-ZLL110-08-08*
5/8	TI-ZLL110-10-10*
3/4	TI-ZLL110-12-12*
1	TI-ZLL110-16-16*

\* - available in AISI 316 steel

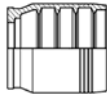
TI-G MINING		STECKO	
		For 2SN hose	For 4SP hose
connection size [inch]	hose I.D. [inch]		
		code	code
1/4	1/4	TI-GST120-04-04-2SN	TI-GST120-04-04-4SP
3/8	3/8	TI-GST120-06-06-2SN	TI-GST120-06-06-4SP
1/2	1/2	TI-GST120-08-08-2SN	TI-GST120-08-08-4SP
3/4	3/4	TI-GST120-12-12-2SN	TI-GST120-12-12-4SP
1	1	TI-GST120-16-16-2SN	TI-GST120-16-16-4SP
1.1/4	1.1/4	TI-GST120-20-20-2SN	TI-GST120-20-20-4SP


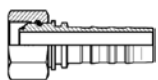
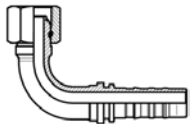
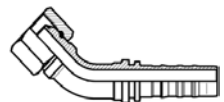
TI-G MINING		STECKO - dimensions	
connection size [inch]	hose I.D. [inch]		
		D [mm]	d [mm]
1/4	1/4	15	10
3/8	3/8	20	14
1/2	1/2	24	18
3/4	3/4	29	24
1	1	39	31
1.1/4	1.1/4	46	38


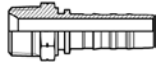
STECKO fittings are delivered as a set with a crimp ferrule.



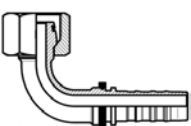
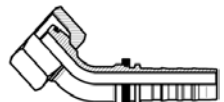
# HIGH PRESSURE - fittings

## NON SKIVE fittings - N type

TI-N NON SKIVE		Crimp ferrule	
hose I.D. [inch]			
		code	type of hose
3/4		TI-N4-12	4SP / 4SH / R13 / R15
1		TI-N4-16	4SP / 4SH / R13 / R15
1.1/4		TI-N4-20	4SH
1.1/2		TI-N4-24	4SH
2		TI-N4-32	4SH

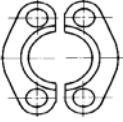
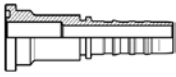
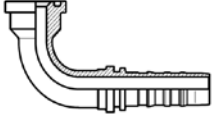
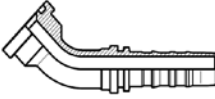
TI-N NON SKIVE		BSP thread, 60° cone, O-ring			
		AGR	DKOR	DKOR 90	DKOR 45
thread size [inch]	hose I.D. [inch]				
		code	code	code	code
3/4	3/4	TI-NBZ110-12-12	TI-NBW110-12-12	TI-NBW210-12-12	TI-NBW310-12-12
1	1	TI-NBZ110-16-16	TI-NBW110-16-16	TI-NBW210-16-16	TI-NBW310-16-16
1.1/4	1	TI-NBZ110-20-16	TI-NBW110-20-16	TI-NBW210-20-16	TI-NBW310-20-16
	1.1/4	TI-NBZ110-20-20	TI-NBW110-20-20	TI-NBW210-20-20	TI-NBW310-20-20
1.1/2	1.1/4	TI-NBZ110-24-20	TI-NBW110-24-20	TI-NBW210-24-20	TI-NBW310-24-20
	1.1/2	TI-NBZ110-24-24	TI-NBW110-24-24	TI-NBW210-24-24	TI-NBW310-24-24
2	2	TI-NBZ110-32-32	TI-NBW110-32-32	TI-NBW210-32-32	TI-NBW310-32-32

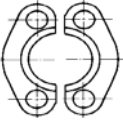
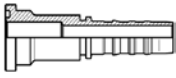
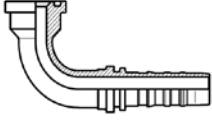
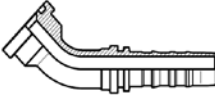
TI-N NON SKIVE		BSPT thread, 60° cone AGR-K	NPTF thread, 60° cone AGN
thread size [inch]	hose I.D. [inch]		
		code	code
3/4	3/4	TI-NBZ130-12-12	TI-NNZ110-12-12
1	1	TI-NBZ130-16-16	TI-NNZ110-16-16
1.1/4	1	-	TI-NNZ110-20-16
	1.1/4	TI-NBZ130-20-20	TI-NNZ110-20-20
1.1/2	1.1/4	-	TI-NNZ110-24-20
	1.1/2	TI-NBZ130-24-24	TI-NNZ110-24-24
2	2	TI-NBZ130-32-32	TI-NNZ110-32-32

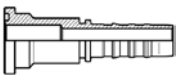
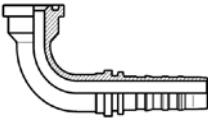
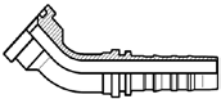
TI-N NON SKIVE		Metric thread, 24° cone, O-ring, heavy duty			
		CES	DKOS	DKOS 90	DKOS 45
thread size [mm]	hose I.D. [inch]				
		code	code	code	code
M30x2	3/4	TI-NMZ112-30-12	TI-NMW122-30-12	TI-NMW222-30-12	TI-NMW322-30-12
M36x2	3/4	TI-NMZ112-36-12	TI-NMW122-36-12	TI-NMW222-36-12	TI-NMW322-36-12
	1	TI-NMZ112-36-16	TI-NMW122-36-16	TI-NMW222-36-16	TI-NMW322-36-16
M42x2	1	TI-NMZ112-42-16	TI-NMW122-42-16	TI-NMW222-42-16	TI-NMW322-42-16
	1.1/4	TI-NMZ112-42-20	TI-NMW122-42-20	TI-NMW222-42-20	TI-NMW322-42-20
M52x2	1.1/4	TI-NMZ112-52-20	TI-NMW122-52-20	TI-NMW222-52-20	TI-NMW322-52-20
	1.1/2	TI-NMZ112-52-24	TI-NMW122-52-24	TI-NMW222-52-24	TI-NMW322-52-24

# HIGH PRESSURE - fittings

## NON SKIVE fittings - N type

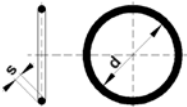
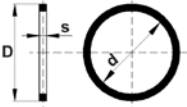
TI-N NON SKIVE		SAE 3000 flange			
			SFL	SFL 90	SFL 45
flange size [inch]	hose I.D. [inch]				
		code	code	code	code
3/4	3/4	TI-ZSK611-12	TI-NSK111-12-12	TI-NSK211-12-12	TI-NSK311-12-12
	1		TI-NSK111-12-16	TI-NSK211-12-16	TI-NSK311-12-16
1	3/4	TI-ZSK611-16	TI-NSK111-16-12	TI-NSK211-16-12	TI-NSK311-16-12
	1		TI-NSK111-16-16	TI-NSK211-16-16	TI-NSK311-16-16
1.1/4	1	TI-ZSK611-20	TI-NSK111-20-16	TI-NSK211-20-16	TI-NSK311-20-16
	1.1/4		TI-NSK111-20-20	TI-NSK211-20-20	TI-NSK311-20-20
1.1/2	1.1/4	TI-ZSK611-24	TI-NSK111-24-20	TI-NSK211-24-20	TI-NSK311-24-20
	1.1/2		TI-NSK111-24-24	TI-NSK211-24-24	TI-NSK311-24-24
2	1.1/2	TI-ZSK611-32	TI-NSK111-32-24	TI-NSK211-32-24	TI-NSK311-32-24
	2		TI-NSK111-32-32	TI-NSK211-32-32	TI-NSK311-32-32
2.1/2	2	TI-ZSK611-40	TI-NSK111-40-32	TI-NSK211-40-32	TI-NSK311-40-32


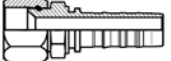
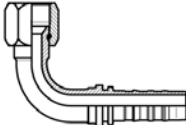
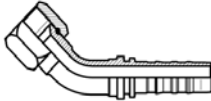
TI-N NON SKIVE		SAE 6000 flange			
			SFS	SFS 90	SFS 45
flange size [inch]	hose I.D. [inch]				
		code	code	code	code
3/4	3/4	TI-ZSK612-12	TI-NSK112-12-12	TI-NSK212-12-12	TI-NSK312-12-12
	1		TI-NSK112-12-16	TI-NSK212-12-16	TI-NSK312-12-16
1	3/4	TI-ZSK612-16	TI-NSK112-16-12	TI-NSK212-16-12	TI-NSK312-16-12
	1		TI-NSK112-16-16	TI-NSK212-16-16	TI-NSK312-16-16
1.1/4	1	TI-ZSK612-20	TI-NSK112-20-16	TI-NSK212-20-16	TI-NSK312-20-16
	1.1/4		TI-NSK112-20-20	TI-NSK212-20-20	TI-NSK312-20-20
1.1/2	1.1/4	TI-ZSK612-24	TI-NSK112-24-20	TI-NSK212-24-20	TI-NSK312-24-20
	1.1/2		TI-NSK112-24-24	TI-NSK212-24-24	TI-NSK312-24-24
2	1.1/2	TI-ZSK612-32	TI-NSK112-32-24	TI-NSK212-32-24	TI-NSK312-32-24
	2		TI-NSK112-32-32	TI-NSK212-32-32	TI-NSK312-32-32



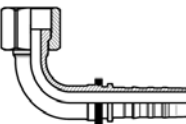
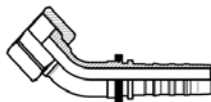
TI-N NON SKIVE		SUPER CAT flange		
		SFS	SFS 90	SFS 45
flange size [inch]	hose I.D. [inch]			
		code	code	code
3/4	3/4	TI-NSK113-12-12	TI-NSK213-12-12	TI-NSK313-12-12
1	3/4	TI-NSK113-16-12	TI-NSK213-16-12	TI-NSK313-16-12
	1	TI-NSK113-16-16	TI-NSK213-16-16	TI-NSK313-16-16
1.1/4	1	TI-NSK113-20-16	TI-NSK213-20-16	TI-NSK313-20-16
	1.1/4	TI-NSK113-20-20	TI-NSK213-20-20	TI-NSK313-20-20
1.1/2	1.1/4	TI-NSK113-24-20	TI-NSK213-24-20	TI-NSK313-24-20
	1.1/2	TI-NSK113-24-24	TI-NSK213-24-24	TI-NSK313-24-24
2	2	TI-NSK113-32-32	TI-NSK213-32-32	TI-NSK313-32-32

# HIGH PRESSURE - fittings

## NON SKIVE fittings - N type

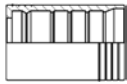
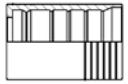
TI-USK	SAE flange seal			
	O-ring (NBR)		flat (polyurethane)	
flange size [inch]				
	code	d x s [mm]	code	D x d x s [mm]
1/2	TI-USK110-08	18.64 x 3.53	TI-USK110-08-PU	25.40 x 17.02 x 2.79
3/4	TI-USK110-12	24.99 x 3.53	TI-USK110-12-PU	31.72 x 23.36 x 2.79
1	TI-USK110-16	32.92 x 3.53	TI-USK110-16-PU	39.62 x 31.24 x 2.79
1.1/4	TI-USK110-20	37.69 x 3.53	TI-USK110-20-PU	44.45 x 36.07 x 2.79
1.1/2	TI-USK110-24	47.22 x 3.53	TI-USK110-24-PU	53.98 x 45.34 x 2.79
2	TI-USK110-32	56.75 x 3.53	TI-USK110-32-PU	63.50 x 54.86 x 2.79

TI-N NON SKIVE		JIC UNF thread, 74° cone			
		AGJ	DKJ	DKJ 90	DKJ 45
thread size [inch]	hose I.D. [inch]				
		code	code	code	code
1.1/16-16	3/4	TI-NJZ110-17-12	TI-NJW110-17-12	TI-NJW210-17-12	TI-NJW310-17-12
1.5/16-12	3/4	TI-NJZ110-21-12	TI-NJW110-21-12	TI-NJW210-21-12	TI-NJW310-21-12
	1	TI-NJZ110-21-16	TI-NJW110-21-16	TI-NJW210-21-16	TI-NJW310-21-16
1.5/8-12	1	TI-NJZ110-26-16	TI-NJW110-26-16	TI-NJW210-26-16	TI-NJW310-26-16
	1.1/4	TI-NJZ110-26-20	TI-NJW110-26-20	TI-NJW210-26-20	TI-NJW310-26-20
1.7/8-12	1.1/2	TI-NJZ110-30-24	TI-NJW110-30-24	TI-NJW210-30-24	TI-NJW310-30-24
2.1/2-12	2	TI-NJZ110-40-32	TI-NJW110-40-32	TI-NJW210-40-32	TI-NJW310-40-32

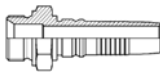
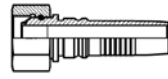
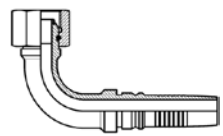
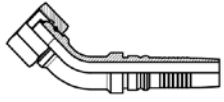
TI-N NON SKIVE		ORFS UNF thread, flat sealing			
		AGO	DKO	DKO 90	DKO 45
thread size [inch]	hose I.D. [inch]				
		code	code	code	code
1.3/16-12	3/4	TI-NOZ110-19-12	TI-NOW110-19-12	TI-NOW210-19-12	TI-NOW310-19-12
1.7/16-12	1	TI-NOZ110-23-16	TI-NOW110-23-16	TI-NOW210-23-16	TI-NOW310-23-16
1.11/16-12	1.1/4	TI-NOZ110-27-20	TI-NOW110-27-20	TI-NOW210-27-20	TI-NOW310-27-20
2-12	1.1/2	TI-NOZ110-32-24	TI-NOW110-32-24	TI-NOW210-32-24	TI-NOW310-32-24

# HIGH PRESSURE - fittings


## INTERLOCK fittings - IL type

TI-IL INTERLOCK	Crimp ferrules			
	IL4		IL13	
hose I.D. [inch]				
	code	hose type	code	hose type
3/4	TI-IL4-12*	4SH / R13 / R15	-	-
1	TI-IL4-16*	4SH / R13 / R15	-	-
1.1/4	TI-IL4-20*	4SH	TI-IL13-20*	R13 / R15
1.1/2	TI-IL4-24*	4SH	TI-IL13-24*	R13 / R15
2	TI-IL4-32*	4SH	TI-IL13-32*	R13 / R15

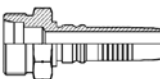
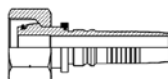
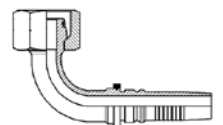
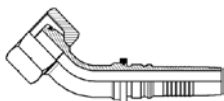
\* - available in AISI 316 steel

TI-IL INTERLOCK		BSP thread, 60° cone, O-ring			
thread size [inch]	hose I.D. [inch]	AGR	DKOR	DKOR 90	DKOR 45
					
		code	code	code	code
3/4	3/4	TI-ILBZ110-12-12*	TI-ILBW110-12-12*	TI-ILBW210-12-12*	TI-ILBW310-12-12*
1	1	TI-ILBZ110-16-16*	TI-ILBW110-16-16*	TI-ILBW210-16-16*	TI-ILBW310-16-16*
1.1/4	1.1/4	TI-ILBZ110-20-20*	TI-ILBW110-20-20*	TI-ILBW210-20-20*	TI-ILBW310-20-20*
1.1/2	1.1/2	TI-ILBZ110-24-24*	TI-ILBW110-24-24*	TI-ILBW210-24-24*	TI-ILBW310-24-24*
2	2	TI-ILBZ110-32-32*	TI-ILBW110-32-32*	TI-ILBW210-32-32*	TI-ILBW310-32-32*

\* - available in AISI 316 steel

TI-IL INTERLOCK		NPTF thread, 60° cone	
thread size [inch]	hose I.D. [inch]	AGN	
			
		code	
3/4	3/4	TI-ILNZ110-12-12*	
1	1	TI-ILNZ110-16-16*	
1.1/4	1.1/4	TI-ILNZ110-20-20*	
1.1/2	1.1/2	TI-ILNZ110-24-24*	
2	2	TI-ILNZ110-32-32*	

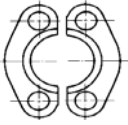
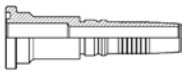
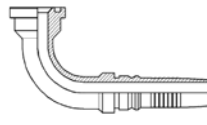
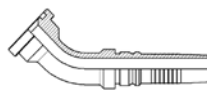
\* - available in AISI 316 steel

TI-IL INTERLOCK		Metric thread, 24° cone, O-ring, heavy series			
thread size [inch]	hose I.D. [inch]	CES	DKOS	DKOS 90	DKOS 45
					
		code	code	code	code
M30x2	3/4	TI-ILMZ112-30-12*	TI-ILMW122-30-12*	TI-ILMW222-30-12*	TI-ILMW322-30-12*
M36x2	3/4	TI-ILMZ112-36-12*	TI-ILMW122-36-12*	TI-ILMW222-36-12*	TI-ILMW322-36-12*
M42x2	1	TI-ILMZ112-42-16*	TI-ILMW122-42-16*	TI-ILMW222-42-16*	TI-ILMW322-42-16*
M52x2	1.1/4	TI-ILMZ112-52-20*	TI-ILMW122-52-20*	TI-ILMW222-52-20*	TI-ILMW322-52-20*

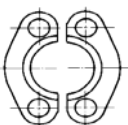
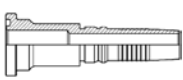
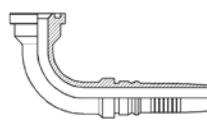
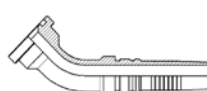
\* - available in AISI 316 steel

# HIGH PRESSURE - fittings

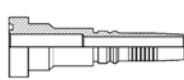
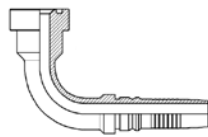
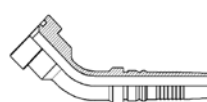
## INTERLOCK fittings - IL type

TI-IL INTERLOCK		SAE 3000 flange			
flange size [inch]	hose I.D. [inch]		SFL	SFL 90	SFL 45
					
		code	code	code	code
3/4	3/4	TI-ZSK611-12*	TI-ILSK111-12-12*	TI-ILSK211-12-12*	TI-ILSK311-12-12*
1	3/4	TI-ZSK611-16*	TI-ILSK111-16-12*	TI-ILSK211-16-12*	TI-ILSK311-16-12*
	1		TI-ILSK111-16-16*	TI-ILSK211-16-16*	TI-ILSK311-16-16*
1.1/4	1	TI-ZSK611-20*	TI-ILSK111-20-16*	TI-ILSK211-20-16*	TI-ILSK311-20-16*
	1.1/4		TI-ILSK111-20-20*	TI-ILSK211-20-20*	TI-ILSK311-20-20*
1.1/2	1.1/4	TI-ZSK611-24*	TI-ILSK111-24-20*	TI-ILSK211-24-20*	TI-ILSK311-24-20*
	1.1/2		TI-ILSK111-24-24*	TI-ILSK211-24-24*	TI-ILSK311-24-24*
2	2	TI-ZSK611-32*	TI-ILSK111-32-32*	TI-ILSK211-32-32*	TI-ILSK311-32-32*

\* - available in AISI 316 steel

TI-IL INTERLOCK		SAE 6000 flange			
flange size [inch]	hose I.D. [inch]		SFS	SFS 90	SFS 45
					
		code	code	code	code
3/4	3/4	TI-ZSK612-12*	TI-ILSK112-12-12*	TI-ILSK212-12-12*	TI-ILSK312-12-12*
1	3/4	TI-ZSK612-16*	TI-ILSK112-16-12*	TI-ILSK212-16-12*	TI-ILSK312-16-12*
	1		TI-ILSK112-16-16*	TI-ILSK212-16-16*	TI-ILSK312-16-16*
1.1/4	1	TI-ZSK612-20*	TI-ILSK112-20-16*	TI-ILSK212-20-16*	TI-ILSK312-20-16*
	1.1/4		TI-ILSK112-20-20*	TI-ILSK212-20-20*	TI-ILSK312-20-20*
1.1/2	1.1/4	TI-ZSK612-24*	TI-ILSK112-24-20*	TI-ILSK212-24-20*	TI-ILSK312-24-20*
	1.1/2		TI-ILSK112-24-24*	TI-ILSK212-24-24*	TI-ILSK312-24-24*
2	1.1/2	TI-ZSK612-32*	TI-ILSK112-32-24*	TI-ILSK212-32-24*	-
2	2		TI-ILSK112-32-32*	TI-ILSK212-32-32*	TI-ILSK312-32-32*

\* - available in AISI 316 steel

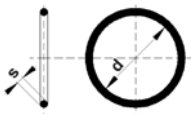
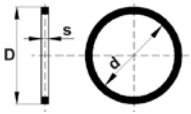
TI-IL INTERLOCK		SUPER CAT flange		
flange size [inch]	hose I.D. [inch]	SFC	SFC 90	SFC 45
				
		code	code	code
3/4	3/4	TI-ILSK113-12-12*	TI-ILSK213-12-12*	TI-ILSK313-12-12*
1	3/4	TI-ILSK113-16-12*	TI-ILSK213-16-12*	TI-ILSK313-16-12*
	1	TI-ILSK113-16-16*	TI-ILSK213-16-16*	TI-ILSK313-16-16*
1.1/4	1	TI-ILSK113-20-16*	TI-ILSK213-20-16*	TI-ILSK313-20-16*
	1.1/4	TI-ILSK113-20-20*	TI-ILSK213-20-20*	TI-ILSK313-20-20*
1.1/2	1.1/4	TI-ILSK113-24-20*	TI-ILSK213-24-20*	TI-ILSK313-24-20*
	1.1/2	TI-ILSK113-24-24*	TI-ILSK213-24-24*	TI-ILSK313-24-24*



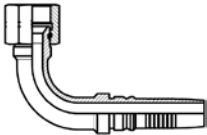
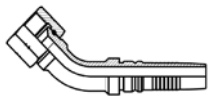
\* - available in AISI 316 steel



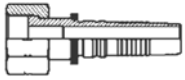
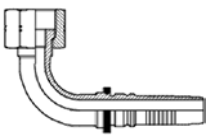
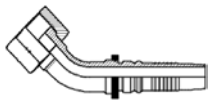
# HIGH PRESSURE - fittings

## INTERLOCK fittings - IL type

TI-USK	SAE flange seal			
	O-ring (NBR)		flat (polyurethane)	
flange size [inch]				
	code	d x s [mm]	code	D x d x s [mm]
3/4	TI-USK110-12	24.99 x 3.53	TI-USK110-12-PU	31.72 x 23.36 x 2.79
1	TI-USK110-16	32.92 x 3.53	TI-USK110-16-PU	39.62 x 31.24 x 2.79
1.1/4	TI-USK110-20	37.69 x 3.53	TI-USK110-20-PU	44.45 x 36.07 x 2.79
1.1/2	TI-USK110-24	47.22 x 3.53	TI-USK110-24-PU	53.98 x 45.34 x 2.79
2	TI-USK110-32	56.75 x 3.53	TI-USK110-32-PU	63.50 x 54.86 x 2.79

TI-IL INTERLOCK		JIC UNF thread, 74° cone			
		AGJ	DKJ	DKJ 90	DKJ 45
thread size [inch]	hose I.D. [inch]				
		code	code	code	code
1.1/16-12	3/4	TI-ILJZ110-17-12*	TI-ILJW110-17-12*	TI-ILJW210-17-12*	TI-ILJW310-17-12*
1.5/16-12	1	TI-ILJZ110-21-16*	TI-ILJW110-21-16*	TI-ILJW210-21-16*	TI-ILJW310-21-16*
1.5/8-12	1.1/4	TI-ILJZ110-26-20*	TI-ILJW110-26-20*	TI-ILJW210-26-20*	TI-ILJW310-26-20*
1.7/8-12	1.1/2	TI-ILJZ110-30-24*	TI-ILJW110-30-24*	TI-ILJW210-30-24*	TI-ILJW310-30-24*
2.1/2-12	2	TI-ILJZ110-40-32*	TI-ILJW110-40-32*	TI-ILJW210-40-32*	TI-ILJW310-40-32*

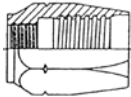
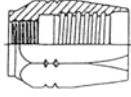
\* - available in AISI 316 steel

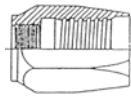
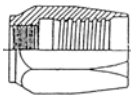
TI-IL INTERLOCK		ORFS UNF thread, flat sealing		
		AGO	DKO 90	DKO 45
thread size [inch]	hose I.D. [inch]			
		code	code	code
1.3/16-12	3/4	TI-ILOW110-19-12*	TI-ILOW210-19-12*	TI-ILOW310-19-12*
1.7/16-12	1	TI-ILOW110-23-16*	TI-ILOW210-23-16*	TI-ILOW310-23-16*
1.11/16-12	1.1/4	TI-ILOW110-27-20*	TI-ILOW210-27-20*	TI-ILOW310-27-20*
2-12	1.1/2	TI-ILOW110-32-24*	TI-ILOW210-32-24*	TI-ILOW310-32-24*

\* - available in AISI 316 steel

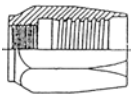
# HIGH PRESSURE - fittings

## Reusable fittings - S type

TI-S REUSABLE	Ferrules for non-skived rubber hoses			
hose I.D. [inch]				
	code	hose type	code	hose type
3/16	TI-S1T-03	1SN	-	2SN
1/4	TI-S1T-04		TI-S2T-04	
5/16	TI-S1T-05		TI-S2T-05	
3/8	TI-S1T-06		TI-S2T-06	
1/2	TI-S1T-08		TI-S2T-08	
5/8	TI-S1T-10		TI-S2T-10	
3/4	TI-S1T-12		TI-S2T-12	
1	TI-S1T-16		TI-S2T-16	
1.1/4	TI-S1T-20		-	
1.1/2	TI-S1T-24		-	

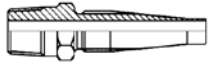
TI-S REUSABLE	Ferrules for thermoplastic hoses			
hose I.D. [inch]				
	code	hose type	code	hose type
5/32	-	MT1 / MTH1	TI-SOL5-025*	OL5 / VE5 (4x8 mm)
3/16	-		TI-SOL5-03	OL5 / VE5
1/4	TI-SMT1-04		TI-SOL5-04	
5/16	TI-SMT1-05			
3/8	TI-SMT1-06			
1/2	TI-SMT1-08			

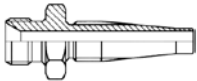
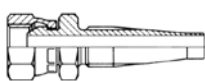
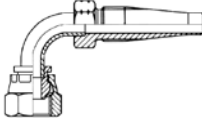
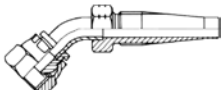
\* - only for 4x8 mm hoses.

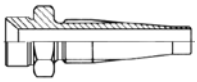
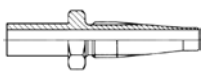
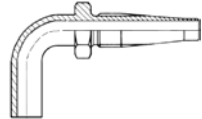
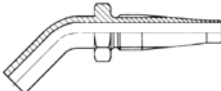
TI-S REUSABLE	Ferrules for thermoplastic hoses	
hose I.D. [inch]		
	code	hose type
3/16	TI-SR7-03	SAE100R7 / MT1 / MTH1
1/4	TI-SR7-04	SAE100R7
	TI-SR7-04M	OL7M / VE7M
5/16	TI-SR7-05	SAE100R7
3/8	TI-SR7-06	
1/2	TI-SR7-08	
5/8	TI-SR7-10	
3/4	TI-SR7-12	
1	TI-SR7-16	

# HIGH PRESSURE - fittings

## Reusable fittings S type

TI-S REUSABLE		BSPT thread, 60° cone	
		AGR-K	
thread size [inch]	hose I.D. [inch]		
		code	
1/8	3/16	TI-SBZ130-02-03	
1/4	1/4	TI-SBZ130-04-04	
3/8	5/16	TI-SBZ130-06-05	
	3/8	TI-SBZ130-06-06	
1/2	1/2	TI-SBZ130-08-08	
3/4	5/8	TI-SBZ130-12-10	
	3/4	TI-SBZ130-12-12	
1	1	TI-SBZ130-16-16	

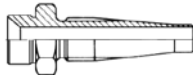
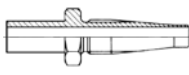
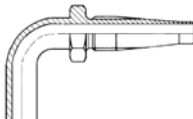
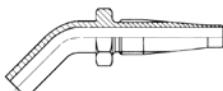
TI-S REUSABLE		BSP thread, 60° cone			
		AGR	DKR	DKR 90	DKR 45
thread size [inch]	hose I.D. [inch]				
		code	code	code	code
1/8	5/32	-	TI-SBW110-02-025*	TI-SBW210-02-025*	-
	3/16	TI-SBZ110-02-03	TI-SBW110-02-03	TI-SBW210-02-03	TI-SBW310-02-03
1/4	5/32	-	TI-SBW110-04-025*	TI-SBW210-04-025*	-
	3/16	-	TI-SBW110-04-03	TI-SBW210-04-03	TI-SBW310-04-03
	1/4	TI-SBZ110-04-04	TI-SBW110-04-04	TI-SBW210-04-04	TI-SBW310-04-04
	5/16	-	TI-SBW110-04-05	TI-SBW210-04-05	-
3/8	5/16	TI-SBZ110-06-05	TI-SBW110-06-05	TI-SBW210-06-05	TI-SBW310-06-05
	3/8	TI-SBZ110-06-06	TI-SBW110-06-06	TI-SBW210-06-06	TI-SBW310-06-06
1/2	1/2	TI-SBZ110-08-08	TI-SBW110-08-08	TI-SBW210-08-08	TI-SBW310-08-08
5/8	5/8	TI-SBZ110-10-10	TI-SBW110-10-10	TI-SBW210-10-10	TI-SBW310-10-10
3/4	3/4	TI-SBZ110-12-12	TI-SBW110-12-12	TI-SBW210-12-12	TI-SBW310-12-12
1	1	TI-SBZ110-16-16	TI-SBW110-16-16	TI-SBW210-16-16	TI-SBW310-16-16


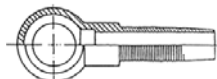

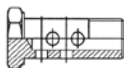
TI-S REUSABLE		Metric standpipe, light series			
		CEL	BEL	BEL 90	BEL 45
pipe O.D. [mm]	hose I.D. [inch]				
		code	code	code	code
4	5/32	-	TI-SMR111-04-025*	TI-SMR211-04-025*	-
	3/16	-	TI-SMR111-04-03	TI-SMR211-04-03	TI-SMR311-04-03
6	1/4	-	TI-SMR111-06-04	TI-SMR211-06-04	TI-SMR311-06-04
8	1/4	TI-SMZ111-14-04	TI-SMR111-08-04	TI-SMR211-08-04	TI-SMR311-08-04
10	5/16	TI-SMZ111-16-05	TI-SMR111-10-05	TI-SMR211-10-05	TI-SMR311-10-05
12	3/8	TI-SMZ111-18-06	TI-SMR111-12-06	TI-SMR211-12-06	TI-SMR311-12-06
15	3/8	-	TI-SMR111-15-06	TI-SMR211-15-06	-
	1/2	TI-SMZ111-22-08	TI-SMR111-15-08	TI-SMR211-15-08	TI-SMR311-15-08
18	5/8	-	TI-SMR111-18-10	TI-SMR211-18-10	TI-SMR311-18-10
22	3/4	-	TI-SMR111-22-12	TI-SMR211-22-12	TI-SMR311-22-12
28	1	-	TI-SMR111-28-16	TI-SMR211-28-16	-


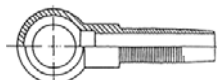


\* - only for 4x8 mm hoses.

# HIGH PRESSURE - fittings

## Reusable fittings S type

TI-S REUSABLE		Metric standpipe, heavy series			
		CES	BES	BES 90	BES 45
pipe O.D. [mm]	hose I.D. [inch]				
		code	code	code	code
6	5/32	-	TI-SMR112-06-025*	TI-SMR212-06-025*	-
	3/16	-	TI-SMR112-06-03	TI-SMR212-06-03	TI-SMR312-06-03
8	3/16	-	TI-SMR112-08-03	TI-SMR212-08-03	-
10	1/4	TI-SMZ112-18-04	TI-SMR112-10-04	TI-SMR212-10-04	TI-SMR312-10-04
12	5/16	-	TI-SMR112-12-05	TI-SMR212-12-05	TI-SMR312-12-05
14	3/8	TI-SMZ112-22-06	TI-SMR112-14-06	TI-SMR212-14-06	TI-SMR312-14-06
16	1/2	TI-SMZ112-24-08	TI-SMR112-16-08	TI-SMR212-16-08	TI-SMR312-16-08
20	5/8	-	TI-SMR112-20-10	TI-SMR212-20-10	TI-SMR312-20-10
25	3/4	-	TI-SMR112-25-12	TI-SMR212-25-12	TI-SMR312-25-12
30	1	-	TI-SMR112-30-16	-	-

TI-S REUSABLE		BANJO imperial			
		copper seal	RNR	bolt	double bolt
thread size [inch]	hose I.D. [inch]				
		code	code	code	code
1/8	5/32	TI-UM-10-16	TI-SBB600-02-025*	TI-ZBB610-02	TI-ZBB620-02
	3/16		TI-SBB600-02-03		
	1/4		TI-SBB600-02-04		
1/4	3/16	TI-UM-13-19	TI-SBB600-04-03	TI-ZBB610-04	TI-ZBB620-04
	1/4		TI-SBB600-04-04		
3/8	1/4	TI-UM-17-21	TI-SBB600-06-04	TI-ZBB610-06	TI-ZBB620-06
	5/16		TI-SBB600-06-05		
	3/8		TI-SBB600-06-06		
1/2	3/8	TI-UM-21-26	TI-SBB600-08-06	TI-ZBB610-08	TI-ZBB620-08
	1/2		TI-SBB600-08-08		
3/4	5/8	TI-UM-27-33	TI-SBB600-12-10	TI-ZBB610-12	TI-ZBB620-12
	3/4		TI-SBB600-12-12		

TI-S REUSABLE		BANJO metric			
		copper seal	RNM	bolt	double
thread size [mm]	hose I.D. [inch]				
		code	code	code	code
M10	5/32	TI-UM-10-16	TI-SMB600-10-025*	TI-ZMB610-10X1	TI-ZMB620-10X1
	3/16		TI-SMB600-10-03		
	1/4		TI-SMB600-10-04		
M12	1/4	TI-UM-12-18	TI-SMB600-12-04	TI-ZMB610-12X1.5	TI-ZMB610-12X1.5
M16	5/16	TI-UM-16-22	TI-SMB600-16-05	TI-ZMB610-16X1.5	TI-ZMB610-16X1.5
M18	5/16	TI-UM-18-24	TI-SMB600-18-05	TI-ZMB610-18X1.5	TI-ZMB620-18X1.5
	3/8		TI-SMB600-18-06		
	1/2		TI-SMB600-18-08		
M20	3/8	TI-UM-20-26	TI-SMB600-20-06	TI-ZMB610-20X1.5	TI-ZMB620-20X1.5

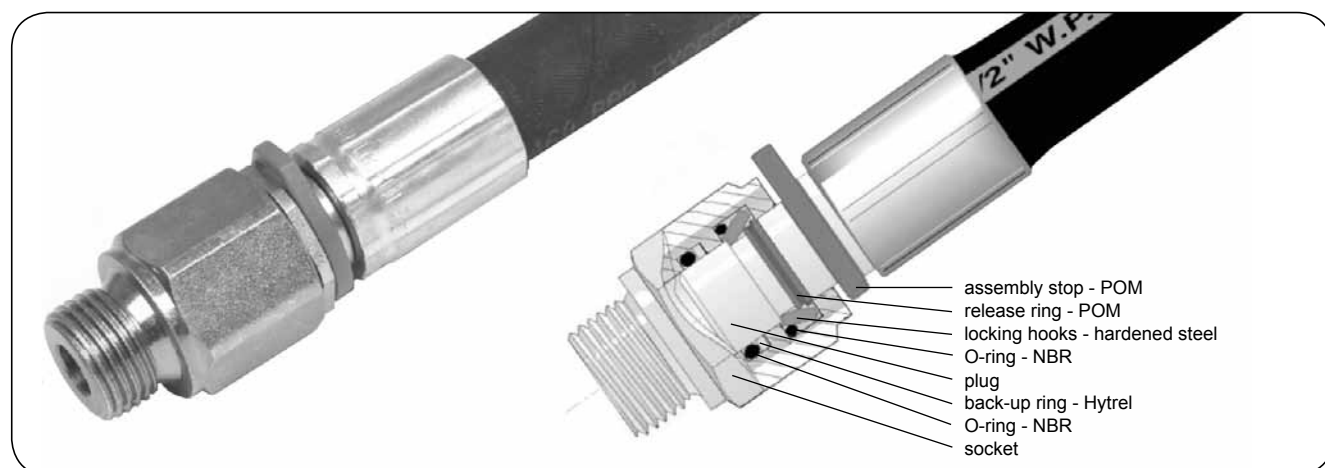
\* - only for 4x8 mm hoses.

## HIGH PRESSURE - fittings

### Hydraulic fittings - WEO system

WEO system allows to assemble hydraulic hoses without tools or spanners. The only thing you need is a screw-driver. It is an ideal solution in applications with no space to assemble hoses in a traditional way. Moreover, WEO system significantly reduces assembly time. After connection of a plug with a socket, the plug can align itself (swivel movement), what prevents hose kinking during installation.

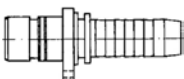
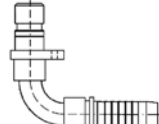
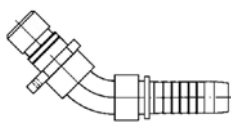
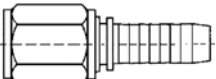
Designed for 1SN, 2SN, 1SC, 2SC hose types.



**Working press.:** 350 bar (up to 3/4" hose size), 250 bar (for 1" hose size)

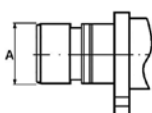
**Material:** Hardened steel

**Working temp.:** From -30°C up to +100°C

CJ-H		plug	90° plug	45° plug	socket
size [inch]	hose I.D. [inch]				
		code	code	code	code
1/4	3/16	CJ-H-147100403	-	-	-
	1/4	CJ-H-147100404	CJ-H-147140404	CJ-H-147120404	CJ-H-148170404
3/8	1/4	CJ-H-147100604	CJ-H-147140604	CJ-H-147120604	-
	5/16	CJ-H-147100605	CJ-H-147140605	CJ-H-147120605	-
	3/8	CJ-H-147100606	CJ-H-147140606	CJ-H-147120606	CJ-H-148170606
1/2	3/8	CJ-H-147100806	CJ-H-147140806	CJ-H-147120806	-
	1/2	CJ-H-147100808	CJ-H-147140808	CJ-H-147120808	CJ-H-148170808
	5/8	CJ-H-147100810	-	-	-
3/4	1/2	CJ-H-147101208	CJ-H-147141208	CJ-H-147121208	-
	5/8	CJ-H-147101210	CJ-H-147141210	CJ-H-147121210	-
	3/4	CJ-H-147101212	CJ-H-147141212	CJ-H-147121212	CJ-H-148171212
1	1	CJ-H-147101616	-	-	CJ-H-148171616

NOTE: to assemble follow the instructions for Z type fittings (IT-4, IT-5, IT-21, IT-22).


### WEO size identification





size	1/4"	3/8"	1/2"	3/4"	1"
A [mm]	10	13	16	23	30


# HIGH PRESSURE - fittings


## Hydraulic fittings - WEO system


Plug - BSP female thread			
			
pressure [bar]	code	size	thread size
350	CJ-H-147210606	3/8"	3/8"
	CJ-H-147210608		1/2"
	CJ-H-147210806	1/2"	3/8"
	CJ-H-147210848		1/2"
	CJ-H-147211208	3/4"	1/2"
	CJ-H-147211212		3/4"

Plug - UNF (JIC) male thread			
			
pressure [bar]	code	size	thread size
350	CJ-H-147270407	1/4"	7/16"-20
250	CJ-H-147270609	3/8"	9/16"-18
	CJ-H-147270612		3/4"-16
	CJ-H-147270812	1/2"	3/4"-16
350	CJ-H-147270813	3/4"	7/8"-14
200	CJ-H-147271217		1.1/16"-12

Socket - BSP male thread, E type seal			
			
pressure [bar]	code	size	thread size
350	CJ-H-148300404	1/4"	1/4"
	CJ-H-148300406		3/8"
	CJ-H-148300606	3/8"	3/8"
	CJ-H-148300608		1/2"
	CJ-H-148300808	1/2"	1/2"
	CJ-H-148300812		3/4"
	CJ-H-148301212	3/4"	3/4"
	CJ-H-148301216		1"
250	CJ-H-148301616	1"	1"

Plug - BSP male thread			
			
pressure [bar]	code	size	thread size
350	CJ-H-147240404	1/4"	1/4"
	CJ-H-147240606	3/8"	3/8"
	CJ-H-147240808	1/2"	1/2"
	CJ-H-147241212	3/4"	3/4"
250	CJ-H-147241616	1"	1"

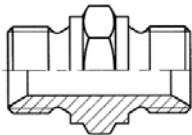
WEO dust cap		
		
pressure [bar]	code	size
350	CJ-H-148110400	1/4"
	CJ-H-148110600	3/8"
	CJ-H-148110800	1/2"
	CJ-H-148111200	3/4"
250	CJ-H-148111600	1"

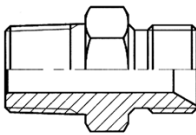
Socket - BSP male thread			
			
pressure [bar]	code	size	thread size
350	CJ-H-148100404	1/4"	1/4"
	CJ-H-148100606	3/8"	3/8"
	CJ-H-148100808	1/2"	1/2"
	CJ-H-148101212	3/4"	3/4"
250	CJ-H-148101616	1"	1"

Socket cap		
		
pressure [bar]	code	size
350	CJ-H-147230400	1/4"
	CJ-H-147230600	3/8"
	CJ-H-147230800	1/2"
	CJ-H-147231200	3/4"
250	CJ-H-147231600	1"

# HIGH PRESSURE - adapters

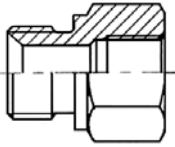
## BSP (BSPT) adapters

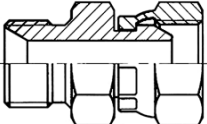
BSP male thread 60°			
			
<b>A101</b>			
code (carbon steel)	code (stainless steel)	thread size [inch]	thread size [inch]
TI-A101-02-02	TI-A101-02-02-SS	1/8	1/8
TI-A101-02-04	TI-A101-02-04-SS	1/8	1/4
TI-A101-02-06	TI-A101-02-06-SS	1/8	3/8
TI-A101-02-08	TI-A101-02-08-SS	1/8	1/2
TI-A101-04-04	TI-A101-04-04-SS	1/4	1/4
TI-A101-04-06	TI-A101-04-06-SS	1/4	3/8
TI-A101-04-08	TI-A101-04-08-SS	1/4	1/2
TI-A101-04-10	-	1/4	5/8
TI-A101-04-12	-	1/4	3/4
TI-A101-04-16	-	1/4	1
TI-A101-06-06	TI-A101-06-06-SS	3/8	3/8
TI-A101-06-08	TI-A101-06-08-SS	3/8	1/2
TI-A101-06-10	-	3/8	5/8
TI-A101-06-12	TI-A101-06-12-SS	3/8	3/4
TI-A101-06-16	TI-A101-06-16-SS	3/8	1
TI-A101-08-08	TI-A101-08-08-SS	1/2	1/2
TI-A101-08-10	TI-A101-08-10-SS	1/2	5/8
TI-A101-08-12	TI-A101-08-12-SS	1/2	3/4
TI-A101-08-16	TI-A101-08-16-SS	1/2	1
TI-A101-08-20	-	1/2	1.1/4
TI-A101-08-24	-	1/2	1.1/2
TI-A101-10-10	TI-A101-10-10-SS	5/8	5/8
TI-A101-10-12	TI-A101-10-12-SS	5/8	3/4
TI-A101-10-16	-	5/8	1
TI-A101-12-12	TI-A101-12-12-SS	3/4	3/4
TI-A101-12-16	TI-A101-12-16-SS	3/4	1
TI-A101-12-20	TI-A101-12-20-SS	3/4	1.1/4
TI-A101-12-24	-	3/4	1.1/2
TI-A101-16-16	TI-A101-16-16-SS	1	1
TI-A101-16-20	TI-A101-16-20-SS	1	1.1/4
TI-A101-16-24	TI-A101-16-24-SS	1	1.1/2
TI-A101-16-32	TI-A101-16-32-SS	1	2
TI-A101-20-20	TI-A101-20-20-SS	1.1/4	1.1/4
TI-A101-20-24	TI-A101-20-24-SS	1.1/4	1.1/2
TI-A101-20-32	TI-A101-20-32-SS	1.1/4	2
TI-A101-24-24	TI-A101-24-24-SS	1.1/2	1.1/2
TI-A101-24-32	TI-A101-24-32-SS	1.1/2	2
TI-A101-32-32	TI-A101-32-32-SS	2	2
TI-A101-32-40	-	2	2.1/2
TI-A101-32-48	-	2	3
TI-A101-40-40	-	2.1/2	2.1/2
TI-A101-40-48	-	2.1/2	3
TI-A101-48-48	-	3	3

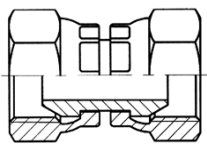
BSPT / BSP 60° male thread			
			
<b>A102</b>			
code (carbon steel)	code (stainless steel)	BSPT thread size [inch]	BSP thread size [inch]
TI-A102-02-02	TI-A102-02-02-SS	1/8	1/8
TI-A102-02-04	TI-A102-02-04-SS	1/8	1/4
-	TI-A102-04-02-SS	1/4	1/8
TI-A102-04-04	TI-A102-04-04-SS	1/4	1/4
TI-A102-04-06	TI-A102-04-06-SS	1/4	3/8
TI-A102-04-08	TI-A102-04-08-SS	1/4	1/2
-	TI-A102-04-12-SS	1/4	3/4
TI-A102-06-04	TI-A102-06-04-SS	3/8	1/4
TI-A102-06-06	TI-A102-06-06-SS	3/8	3/8
TI-A102-06-08	TI-A102-06-08-SS	3/8	1/2
TI-A102-08-04	TI-A102-08-04-SS	1/2	1/4
TI-A102-08-06	TI-A102-08-06-SS	1/2	3/8
TI-A102-08-08	TI-A102-08-08-SS	1/2	1/2
TI-A102-08-12	TI-A102-08-12-SS	1/2	3/4
-	TI-A102-12-04-SS	3/4	1/4
TI-A102-12-06	TI-A102-12-06-SS	3/4	3/8
TI-A102-12-08	TI-A102-12-08-SS	3/4	1/2
-	TI-A102-12-10-SS	3/4	5/8
TI-A102-12-12	TI-A102-12-12-SS	3/4	3/4
TI-A102-12-16	TI-A102-12-16-SS	3/4	1
TI-A102-16-08	-	1	1/2
TI-A102-16-12	TI-A102-16-12-SS	1	3/4
TI-A102-16-16	TI-A102-16-16-SS	1	1
TI-A102-16-20	TI-A102-16-20-SS	1	1.1/4
TI-A102-20-16	TI-A102-20-16-SS	1.1/4	1
TI-A102-20-20	TI-A102-20-20-SS	1.1/4	1.1/4
-	TI-A102-24-20-SS	1.1/2	1.1/4
TI-A102-24-24	TI-A102-24-24-SS	1.1/2	1.1/2
TI-A102-24-32	-	1.1/2	2
-	TI-A102-32-24-SS	2	1.1/2
TI-A102-32-32	TI-A102-32-32-SS	2	2
TI-A102-40-40	-	2.1/2	2.1/2

# HIGH PRESSURE - adapters

## BSP (BSPT) adapters

BSP 60° male / BSP female thread			
		<b>A103</b>	
code (carbon steel)	code (stainless steel)	male thread size [inch]	female thread size [inch]
TI-A103-02-02	TI-A103-02-02-SS	1/8	1/8
TI-A103-02-04	TI-A103-02-04-SS	1/8	1/4
TI-A103-02-06	TI-A103-02-06-SS	1/8	3/8
TI-A103-02-08	-	1/8	1/2
TI-A103-04-02	TI-A103-04-02-SS	1/4	1/8
TI-A103-04-04	TI-A103-04-04-SS	1/4	1/4
TI-A103-04-06	TI-A103-04-06-SS	1/4	3/8
TI-A103-04-08	TI-A103-04-08-SS	1/4	1/2
TI-A103-04-12	-	1/4	3/4
TI-A103-06-04	TI-A103-06-04-SS	3/8	1/4
TI-A103-06-06	TI-A103-06-06-SS	3/8	3/8
TI-A103-06-08	TI-A103-06-08-SS	3/8	1/2
TI-A103-06-12	-	3/8	3/4
TI-A103-06-16	-	3/8	1
TI-A103-08-02	-	1/2	1/8
TI-A103-08-04	TI-A103-08-04-SS	1/2	1/4
TI-A103-08-06	TI-A103-08-06-SS	1/2	3/8
TI-A103-08-08	TI-A103-08-08-SS	1/2	1/2
TI-A103-08-12	TI-A103-08-12-SS	1/2	3/4
TI-A103-08-16	-	1/2	1
TI-A103-08-20	TI-A103-08-20-SS	1/2	1.1/4
TI-A103-12-04	-	3/4	1/4
TI-A103-12-06	TI-A103-12-06-SS	3/4	3/8
TI-A103-12-08	TI-A103-12-08-SS	3/4	1/2
TI-A103-12-12	TI-A103-12-12-SS	3/4	3/4
TI-A103-12-16	TI-A103-12-16-SS	3/4	1
TI-A103-12-20	-	3/4	1.1/4
TI-A103-12-24	-	3/4	1.1/2
TI-A103-16-04	-	1	1/4
TI-A103-16-06	-	1	3/8
TI-A103-16-08	TI-A103-16-08-SS	1	1/2
TI-A103-16-12	TI-A103-16-12-SS	1	3/4
TI-A103-16-16	TI-A103-16-16-SS	1	1
TI-A103-16-20	TI-A103-16-20-SS	1	1.1/4
TI-A103-16-24	-	1	1.1/2
TI-A103-16-32	-	1	2
TI-A103-20-08	-	1.1/4	1/2
TI-A103-20-12	-	1.1/4	3/4
TI-A103-20-16	TI-A103-20-16-SS	1.1/4	1
TI-A103-20-20	TI-A103-20-20-SS	1.1/4	1.1/4
TI-A103-20-24	-	1.1/4	1.1/2
TI-A103-20-32	-	1.1/4	2
TI-A103-24-08	-	1.1/2	1/2
TI-A103-24-12	-	1.1/2	3/4
TI-A103-24-16	-	1.1/2	1
TI-A103-24-20	TI-A103-24-20-SS	1.1/2	1.1/4
TI-A103-24-24	TI-A103-24-24-SS	1.1/2	1.1/2
TI-A103-24-32	TI-A103-24-32-SS	1.1/2	2
TI-A103-32-16	-	2	1
TI-A103-32-20	-	2	1.1/4
TI-A103-32-24	TI-A103-32-24-SS	2	1.1/2
TI-A103-32-32	TI-A103-32-32-SS	2	2

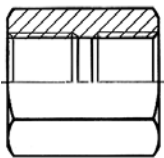
BSP 60° male / female thread			
		<b>A104</b>	
code (carbon steel)	code (stainless steel)	male thread size [inch]	female thread size [inch]
TI-A104-02-02	TI-A104-02-02-SS	1/8	1/8
TI-A104-02-04	TI-A104-02-04-SS	1/8	1/4
TI-A104-04-04	TI-A104-04-04-SS	1/4	1/4
TI-A104-04-06	TI-A104-04-06-SS	1/4	3/8
TI-A104-04-08	TI-A104-04-08-SS	1/4	1/2
TI-A104-06-02	-	3/8	1/8
TI-A104-06-04	-	3/8	1/4
TI-A104-06-06	TI-A104-06-06-SS	3/8	3/8
TI-A104-06-08	TI-A104-06-08-SS	3/8	1/2
TI-A104-06-12	-	3/8	3/4
TI-A104-08-04	TI-A104-08-04-SS	1/2	1/4
TI-A104-08-06	TI-A104-08-06-SS	1/2	3/8
TI-A104-08-08	TI-A104-08-08-SS	1/2	1/2
TI-A104-08-10	-	1/2	5/8
TI-A104-08-12	TI-A104-08-12-SS	1/2	3/4
TI-A104-08-16	-	1/2	1
TI-A104-10-10	-	5/8	5/8
TI-A104-12-06	-	3/4	3/8
TI-A104-12-08	-	3/4	1/2
TI-A104-12-12	TI-A104-12-12-SS	3/4	3/4
TI-A104-12-16	TI-A104-12-16-SS	3/4	1
TI-A104-16-08	-	1	1/2
TI-A104-16-12	TI-A104-16-12-SS	1	3/4
TI-A104-16-16	TI-A104-16-16-SS	1	1
-	TI-A104-16-20-SS	1	1.1/4
TI-A104-20-20	TI-A104-20-20-SS	1.1/4	1.1/4
-	TI-A104-20-24-SS	1.1/4	1.1/2
TI-A104-24-24	TI-A104-24-24-SS	1.1/2	1.1/2
-	TI-A104-24-32-SS	1.1/2	2
TI-A104-32-32	-	2	2


2 x BSP 60° female thread		
		<b>A105</b>
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A105-02	TI-A105-02-SS	1/8
TI-A105-04	TI-A105-04-SS	1/4
TI-A105-06	TI-A105-06-SS	3/8
TI-A105-08	TI-A105-08-SS	1/2
TI-A105-10	-	5/8
TI-A105-12	TI-A105-12-SS	3/4
TI-A105-16	TI-A105-16-SS	1
TI-A105-20	-	1.1/4
TI-A105-24	-	1.1/2
TI-A105-32	-	2

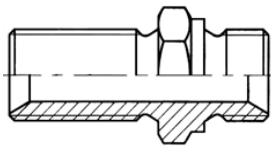


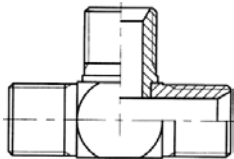
# HIGH PRESSURE - adapters

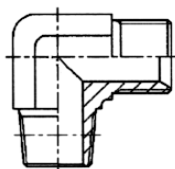
## BSP (BSPT) adapters

2 x BSP female thread			
			
<b>A106</b>			
code (carbon steel)	code (stainless steel)	thread size [inch]	thread size [inch]
TI-A106-02-02	-	1/8	1/8
TI-A106-02-04	-	1/8	1/4
TI-A106-02-06	-	1/8	3/8
TI-A106-02-08	-	1/8	1/2
TI-A106-04-04	TI-A106-04-04-SS	1/4	1/4
TI-A106-04-06	-	1/4	3/8
TI-A106-04-08	-	1/4	1/2
TI-A106-04-12	-	1/4	3/4
TI-A106-06-06	TI-A106-06-06-SS	3/8	3/8
TI-A106-06-08	-	3/8	1/2
TI-A106-06-12	-	3/8	3/4
TI-A106-08-08	TI-A106-08-08-SS	1/2	1/2
TI-A106-08-12	-	1/2	3/4
TI-A106-08-16	-	1/2	1
TI-A106-12-12	TI-A106-12-12-SS	3/4	3/4
TI-A106-12-16	-	3/4	1
TI-A106-16-16	TI-A106-16-16-SS	1	1
TI-A106-20-20	-	1.1/4	1.1/4
TI-A106-24-24	-	1.1/2	1.1/2
TI-A106-32-32	-	2	2

BSP thread		
		
<b>A108</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A108-02	-	1/8
TI-A108-04	TI-A108-04-SS	1/4
TI-A108-06	TI-A108-06-SS	3/8
TI-A108-08	TI-A108-08-SS	1/2
TI-A108-12	TI-A108-12-SS	3/4
TI-A108-16	TI-A108-16-SS	1
TI-A108-20	-	1.1/4
TI-A108-24	-	1.1/2

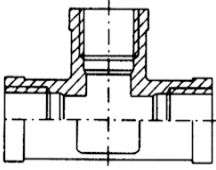
2 x BSP 60° male thread (use A108 nut adapter)		
		
<b>A107</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A107-04	TI-A107-04-SS	1/4
TI-A107-06	TI-A107-06-SS	3/8
TI-A107-08	TI-A107-08-SS	1/2
TI-A107-12	TI-A107-12-SS	3/4
TI-A107-16	TI-A107-16-SS	1
TI-A107-20	-	1.1/4
TI-A107-24	-	1.1/2

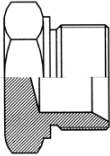
3 x BSP 60° male thread		
		
<b>A109</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A109-02	-	1/8
TI-A109-04	TI-A109-04-SS	1/4
TI-A109-06	TI-A109-06-SS	3/8
TI-A109-08	TI-A109-08-SS	1/2
TI-A109-10	-	5/8
TI-A109-12	TI-A109-12-SS	3/4
TI-A109-16	TI-A109-16-SS	1
TI-A109-20	TI-A109-20-SS	1.1/4
TI-A109-24	-	1.1/2

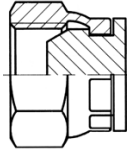
BSPT male thread / BSP male thread 60°		
		
<b>A110</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A110-02	TI-A110-02-SS	1/8
TI-A110-04	TI-A110-04-SS	1/4
TI-A110-06	TI-A110-06-SS	3/8
TI-A110-08	TI-A110-08-SS	1/2
TI-A110-12	TI-A110-12-SS	3/4
TI-A110-16	TI-A110-16-SS	1
TI-A110-20	-	1.1/4
TI-A110-24	TI-A110-24-SS	1.1/2
TI-A110-32	-	2

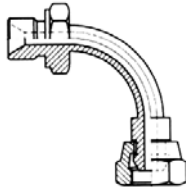
# HIGH PRESSURE - adapters

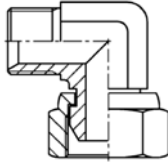
## BSP (BSPT) adapters

BSP female thread		
		
<b>A111</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A111-02	-	1/8
TI-A111-04	TI-A111-04-SS	1/4
TI-A111-06	TI-A111-06-SS	3/8
TI-A111-08	TI-A111-08-SS	1/2
TI-A111-12	TI-A111-12-SS	3/4
TI-A111-16	TI-A111-16-SS	1
TI-A111-20	-	1.1/4
TI-A111-24	-	1.1/2
TI-A111-32	-	2

BSP 60° male thread		
		
<b>A113</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A113-02	TI-A113-02-SS	1/8
TI-A113-04	TI-A113-04-SS	1/4
TI-A113-06	TI-A113-06-SS	3/8
TI-A113-08	TI-A113-08-SS	1/2
TI-A113-10	-	5/8
TI-A113-12	TI-A113-12-SS	3/4
TI-A113-16	TI-A113-16-SS	1
TI-A113-20	TI-A113-20-SS	1.1/4
TI-A113-24	TI-A113-24-SS	1.1/2
TI-A113-32	TI-A113-32-SS	2
TI-A113-40	-	2.1/2

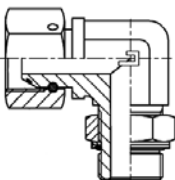
BSP 60° female thread		
		
<b>A112</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A112-02	-	1/8
TI-A112-04	TI-A112-04-SS	1/4
TI-A112-06	TI-A112-06-SS	3/8
TI-A112-08	TI-A112-08-SS	1/2
TI-A112-10	-	5/8
TI-A112-12	TI-A112-12-SS	3/4
TI-A112-16	TI-A112-16-SS	1
TI-A112-20	TI-A112-20-SS	1.1/4
TI-A112-24	TI-A112-24-SS	1.1/2
TI-A112-32	TI-A112-32-SS	2

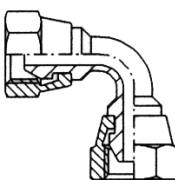
BSP 60° male / female thread		
		
<b>A114</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A114-02	-	1/8
TI-A114-04	TI-A114-04-SS	1/4
TI-A114-06	TI-A114-06-SS	3/8
TI-A114-08	TI-A114-08-SS	1/2
TI-A114-10	-	5/8
TI-A114-12	TI-A114-12-SS	3/4
TI-A114-16	TI-A114-16-SS	1
TI-A114-20	TI-A114-20-SS	1.1/4
TI-A114-24	TI-A114-24-SS	1.1/2
TI-A114-32	TI-A114-32-SS	2

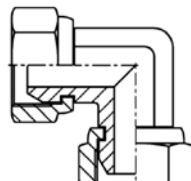
BSP 60° male / female thread		
		
<b>A114C</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
-	TI-A114C-02-SS	1/8
TI-A114C-04	TI-A114C-04-SS	1/4
TI-A114C-06	TI-A114C-06-SS	3/8
TI-A114C-08	TI-A114C-08-SS	1/2
TI-A114C-12	TI-A114C-12-SS	3/4
TI-A114C-16	TI-A114C-16-SS	1
TI-A114C-20	TI-A114C-20-SS	1.1/4
TI-A114C-24	TI-A114C-24-SS	1.1/2

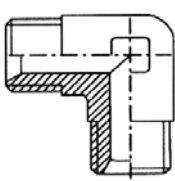
## HIGH PRESSURE - adapters

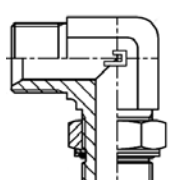
### BSP (BSPT) adapters

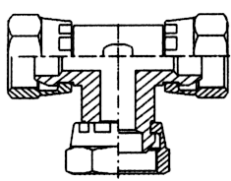
BSP male thread / BSP 60° female thread		
		
<b>A114N</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A114N-02	-	1/8
TI-A114N-04	-	1/4
TI-A114N-06	-	3/8
TI-A114N-08	-	1/2
TI-A114N-12	-	3/4
TI-A114N-16	-	1
TI-A114N-20	-	1.1/4
TI-A114N-24	-	1.1/2
TI-A114N-32	-	2

2 x BSP 60° female thread		
		
<b>A115</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A115-02	-	1/8
TI-A115-04	TI-A115-04-SS	1/4
TI-A115-06	TI-A115-06-SS	3/8
TI-A115-08	TI-A115-08-SS	1/2
TI-A115-10	-	5/8
TI-A115-12	TI-A115-12-SS	3/4
TI-A115-16	TI-A115-16-SS	1
TI-A115-20	TI-A115-20-SS	1.1/4
TI-A115-24	-	1.1/2
TI-A115-32	-	2

2 x BSP 60° female thread		
		
<b>A115C</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A115C-04	TI-A115C-04-SS	1/4
TI-A115C-06	TI-A115C-06-SS	3/8
TI-A115C-08	TI-A115C-08-SS	1/2
TI-A115C-12	TI-A115C-12-SS	3/4
TI-A115C-16	TI-A115C-16-SS	1
TI-A115C-20	TI-A115C-20-SS	1.1/4
TI-A115C-24	TI-A115C-24-SS	1.1/2

2 x BSP 60° male thread		
		
<b>A116</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A116-02	TI-A116-02-SS	1/8
TI-A116-04	TI-A116-04-SS	1/4
TI-A116-06	TI-A116-06-SS	3/8
TI-A116-08	TI-A116-08-SS	1/2
TI-A116-12	TI-A116-12-SS	3/4
TI-A116-16	TI-A116-16-SS	1
TI-A116-20	TI-A116-20-SS	1.1/4

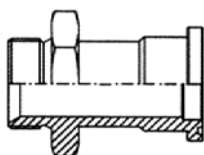
BSP male thread / BSP 60° male thread		
		
<b>A116N</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A116N-02	-	1/8
TI-A116N-04	TI-A116N-04-SS	1/4
TI-A116N-06	TI-A116N-06-SS	3/8
TI-A116N-08	TI-A116N-08-SS	1/2
TI-A116N-12	TI-A116N-12-SS	3/4
TI-A116N-16	TI-A116N-16-SS	1
TI-A116N-20	-	1.1/4
TI-A116N-24	-	1.1/2
TI-A116N-32	-	2

3 x BSP 60° female thread		
		
<b>A117</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A117-04	TI-A117-04-SS	1/4
TI-A117-06	TI-A117-06-SS	3/8
TI-A117-08	TI-A117-08-SS	1/2
TI-A117-12	TI-A117-12-SS	3/4
TI-A117-16	TI-A117-16-SS	1

## HIGH PRESSURE - adapters

### BSP (BSPT) adapters

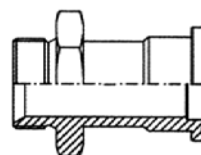
BSP male thread / SAE 3000 flange



**A118**

code (carbon steel)	code (stainless steel)	thread size [inch]	flange size [inch]
TI-A118-08	-	1/2	1/2
TI-A118-12	-	3/4	3/4
TI-A118-16	-	1	1
TI-A118-20	-	1.1/4	1.1/4
TI-A118-24	-	1.1/2	1.1/2
TI-A118-32	-	2	2

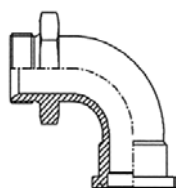
BSP male thread / SAE 6000 flange



**A119**

code (carbon steel)	code (stainless steel)	thread size [inch]	flange size [inch]
TI-A119-08	-	1/2	1/2
TI-A119-12	-	3/4	3/4
TI-A119-16	-	1	1
TI-A119-20	-	1.1/4	1.1/4
TI-A119-24	-	1.1/2	1.1/2
TI-A119-32	-	2	2

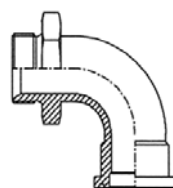
BSP male thread / SAE 3000 flange



**A120**

code (carbon steel)	code (stainless steel)	thread size [inch]	flange size [inch]
TI-A120-08	-	1/2	1/2
TI-A120-12	-	3/4	3/4
TI-A120-16	-	1	1
TI-A120-20	-	1.1/4	1.1/4
TI-A120-24	-	1.1/2	1.1/2
TI-A120-32	-	2	2

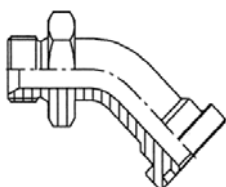
BSP male thread / SAE 6000 flange



**A121**

code (carbon steel)	code (stainless steel)	thread size [inch]	flange size [inch]
TI-A121-08	-	1/2	1/2
TI-A121-12	-	3/4	3/4
TI-A121-16	-	1	1
TI-A121-20	-	1.1/4	1.1/4
TI-A121-24	-	1.1/2	1.1/2
TI-A121-32	-	2	2

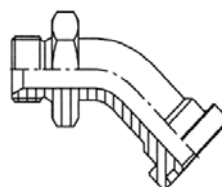
BSP male thread / SAE 3000 flange



**A122**

code (carbon steel)	code (stainless steel)	thread size [inch]	flange size [inch]
TI-A122-08	-	1/2	1/2
TI-A122-12	-	3/4	3/4
TI-A122-16	-	1	1
TI-A122-20	-	1.1/4	1.1/4
TI-A122-24	-	1.1/2	1.1/2
TI-A122-32	-	2	2

BSP male thread / SAE 6000 flange

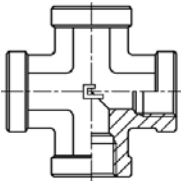


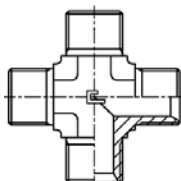
**A123**

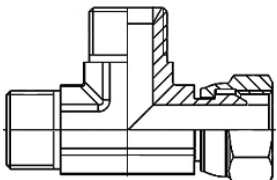
code (carbon steel)	code (stainless steel)	thread size [inch]	flange size [inch]
TI-A123-08	-	1/2	1/2
TI-A123-12	-	3/4	3/4
TI-A123-16	-	1	1
TI-A123-20	-	1.1/4	1.1/4
TI-A123-24	-	1.1/2	1.1/2
TI-A123-32	-	2	2

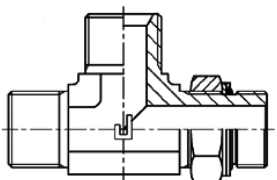
# HIGH PRESSURE - adapters

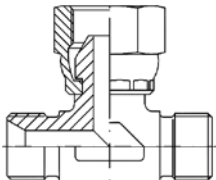
## BSP (BSPT) adapters

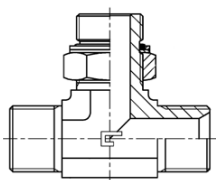
BSP female thread		
		
		<b>A124</b>
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A124-02	-	1/8
TI-A124-04	-	1/4
TI-A124-06	-	3/8
TI-A124-08	-	1/2
TI-A124-12	-	3/4
TI-A124-16	-	1
TI-A124-20	-	1.1/4
TI-A124-24	-	1.1/2
TI-A124-32	-	2

BSP 60° male thread		
		
		<b>A125</b>
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A125-02	TI-A125-02-SS	1/8
TI-A125-04	TI-A125-04-SS	1/4
TI-A125-06	TI-A125-06-SS	3/8
TI-A125-08	TI-A125-08-SS	1/2
TI-A125-12	TI-A125-12-SS	3/4
TI-A125-16	TI-A125-16-SS	1
TI-A125-20	-	1.1/4
TI-A125-24	-	1.1/2
TI-A125-32	-	2

BSP 60° male / female thread		
		
		<b>A126</b>
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A126-02	TI-A126-02-SS	1/8
TI-A126-04	TI-A126-04-SS	1/4
TI-A126-06	TI-A126-06-SS	3/8
TI-A126-08	TI-A126-08-SS	1/2
TI-A126-12	TI-A126-12-SS	3/4
TI-A126-16	TI-A126-16-SS	1
TI-A126-20	TI-A126-20-SS	1.1/4
TI-A126-24	TI-A126-24-SS	1.1/2
TI-A126-32	-	2

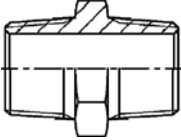
BSP 60° male / BSP male thread		
		
		<b>A126N</b>
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A126N-02	-	1/8
TI-A126N-04	-	1/4
TI-A126N-06	-	3/8
TI-A126N-08	-	1/2
TI-A126N-12	-	3/4
TI-A126N-16	-	1
TI-A126N-20	-	1.1/4
TI-A126N-24	-	1.1/2
TI-A126N-32	-	2

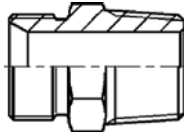
BSP 60° male / female thread		
		
		<b>A127</b>
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A127-02	TI-A127-02-SS	1/8
TI-A127-04	TI-A127-04-SS	1/4
TI-A127-06	TI-A127-06-SS	3/8
TI-A127-08	TI-A127-08-SS	1/2
TI-A127-12	TI-A127-12-SS	3/4
TI-A127-16	TI-A127-16-SS	1
TI-A127-20	TI-A127-20-SS	1.1/4
TI-A127-24	TI-A127-24-SS	1.1/2
TI-A127-32	-	2

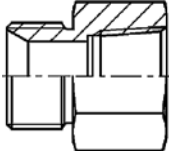
BSP 60° male / BSP male thread		
		
		<b>A127N</b>
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A127N-02	-	1/8
TI-A127N-04	-	1/4
TI-A127N-06	-	3/8
TI-A127N-08	-	1/2
TI-A127N-12	-	3/4
TI-A127N-16	-	1
TI-A127N-20	-	1.1/4
TI-A127N-24	-	1.1/2
TI-A127N-32	-	2

# HIGH PRESSURE - adapters

## BSP (BSPT) / NPT adapters

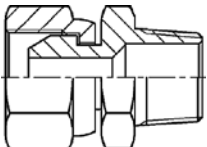
BSPT / NPT male thread			
			
<b>A201</b>			
code (carbon steel)	code (stainless steel)	BSPT thread size [inch]	NPT thread size [inch]
TI-A201-02-02	-	1/8	1/8
TI-A201-04-04	-	1/4	1/4
TI-A201-04-06	-	1/4	3/8
TI-A201-06-04	-	3/8	1/4
TI-A201-06-06	-	3/8	3/8
TI-A201-08-08	-	1/2	1/2
TI-A201-12-12	-	3/4	3/4
TI-A201-16-12	-	1	3/4
TI-A201-16-16	-	1	1
TI-A201-16-20	-	1	1.1/4
TI-A201-20-20	-	1.1/4	1.1/4
TI-A201-24-24	-	1.1/2	1.1/2
TI-A201-32-32	-	2	2

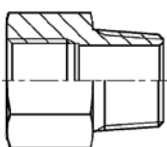
BSP 60° / NPT male thread			
			
<b>A202</b>			
code (carbon steel)	code (stainless steel)	BSP thread size [inch]	NPT thread size [inch]
TI-A202-02-02	TI-A202-02-02-SS	1/8	1/8
TI-A202-02-04	TI-A202-02-04-SS	1/8	1/4
TI-A202-04-02	TI-A202-04-02-SS	1/4	1/8
TI-A202-04-04	TI-A202-04-04-SS	1/4	1/4
TI-A202-04-06	TI-A202-04-06-SS	1/4	3/8
TI-A202-04-08	TI-A202-04-08-SS	1/4	1/2
TI-A202-06-04	TI-A202-06-04-SS	3/8	1/4
TI-A202-06-06	TI-A202-06-06-SS	3/8	3/8
TI-A202-06-08	TI-A202-06-08-SS	3/8	1/2
TI-A202-06-12	TI-A202-06-12-SS	3/8	3/4
TI-A202-08-04	TI-A202-08-04-SS	1/2	1/4
TI-A202-08-06	TI-A202-08-06-SS	1/2	3/8
TI-A202-08-08	TI-A202-08-08-SS	1/2	1/2
TI-A202-08-12	TI-A202-08-12-SS	1/2	3/4
TI-A202-08-16	-	1/2	1
TI-A202-10-08	-	5/8	1/2
TI-A202-10-12	TI-A202-10-12-SS	5/8	3/4
TI-A202-12-08	TI-A202-12-08-SS	3/4	1/2
TI-A202-12-12	TI-A202-12-12-SS	3/4	3/4
TI-A202-12-16	TI-A202-12-16-SS	3/4	1
TI-A202-16-08	-	1	1/2
TI-A202-16-12	TI-A202-16-12-SS	1	3/4
TI-A202-16-16	TI-A202-16-16-SS	1	1
TI-A202-16-20	TI-A202-16-20-SS	1	1.1/4
TI-A202-20-16	TI-A202-20-16-SS	1.1/4	1
TI-A202-20-20	TI-A202-20-20-SS	1.1/4	1.1/4
TI-A202-20-24	TI-A202-20-24-SS	1.1/4	1.1/2
TI-A202-24-20	TI-A202-24-20-SS	1.1/2	1.1/4
TI-A202-24-24	TI-A202-24-24-SS	1.1/2	1.1/2
TI-A202-24-32	TI-A202-24-32-SS	1.1/2	2
TI-A202-32-24	TI-A202-32-24-SS	2	1.1/2
TI-A202-32-32	TI-A202-32-32-SS	2	2
TI-A202-40-40	-	2.1/2	2.1/2

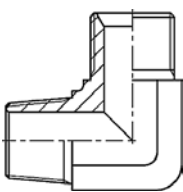
BSP 60° male / NPT female thread			
			
<b>A203</b>			
code (carbon steel)	code (stainless steel)	BSP thread size [inch]	NPT thread size [inch]
TI-A203-02-02	TI-A203-02-02-SS	1/8	1/8
TI-A203-02-04	TI-A203-02-04-SS	1/8	1/4
TI-A203-04-04	TI-A203-04-04-SS	1/4	1/4
TI-A203-04-06	TI-A203-04-06-SS	1/4	3/8
TI-A203-06-04	TI-A203-06-04-SS	3/8	1/4
TI-A203-06-06	TI-A203-06-06-SS	3/8	3/8
TI-A203-08-04	TI-A203-08-04-SS	1/2	1/4
TI-A203-08-08	TI-A203-08-08-SS	1/2	1/2
TI-A203-12-12	TI-A203-12-12-SS	3/4	3/4
-	TI-A203-16-08-SS	1	1/2
TI-A203-16-16	TI-A203-16-16-SS	1	1
TI-A203-20-20	TI-A203-20-20-SS	1.1/4	1.1/4
TI-A203-24-24	TI-A203-24-24-SS	1.1/2	1.1/2
TI-A203-32-08	-	2	1/2
TI-A203-32-32	TI-A203-32-32-SS	2	2

# HIGH PRESSURE - adapters

## BSP (BSPT) / NPT adapters

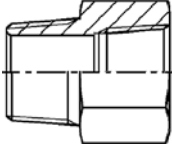
BSP 60° female / NPT male thread			
		<b>A204</b>	
code (carbon steel)	code (stainless steel)	BSP thread size [inch]	NPT thread size [inch]
TI-A204-04-04	TI-A204-04-04-SS	1/4	1/4
TI-A204-04-06	TI-A204-04-06-SS	1/4	3/8
TI-A204-06-04	TI-A204-06-04-SS	3/8	1/4
TI-A204-06-06	TI-A204-06-06-SS	3/8	3/8
TI-A204-06-08	TI-A204-06-08-SS	3/8	1/2
TI-A204-08-06	TI-A204-08-06-SS	1/2	3/8
TI-A204-08-08	TI-A204-08-08-SS	1/2	1/2
TI-A204-12-12	TI-A204-12-12-SS	3/4	3/4
TI-A204-16-16	TI-A204-16-16-SS	1	1

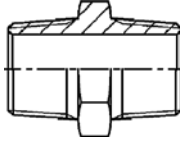
BSP female / NPT male thread			
		<b>A205</b>	
code (carbon steel)	code (stainless steel)	BSP thread size [inch]	NPT thread size [inch]
TI-A205-02-02	TI-A205-02-02-SS	1/8	1/8
TI-A205-02-04	TI-A205-02-04-SS	1/8	1/4
TI-A205-02-06	-	1/8	3/8
-	TI-A205-04-02-SS	1/4	1/8
TI-A205-04-04	TI-A205-04-04-SS	1/4	1/4
TI-A205-04-06	TI-A205-04-06-SS	1/4	3/8
TI-A205-06-06	TI-A205-06-06-SS	3/8	3/8
TI-A205-06-08	TI-A205-06-08-SS	3/8	1/2
TI-A205-08-08	TI-A205-08-08-SS	1/2	1/2
-	TI-A205-08-12-SS	1/2	3/4
TI-A205-08-16	TI-A205-08-16-SS	1/2	1
TI-A205-12-12	TI-A205-12-12-SS	3/4	3/4
TI-A205-16-16	TI-A205-16-16-SS	1	1
TI-A205-20-20	TI-A205-20-20-SS	1.1/4	1.1/4
TI-A205-24-24	TI-A205-24-24-SS	1.1/2	1.1/2
TI-A205-32-32	-	2	2

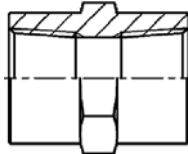
BSP 60° / NPT male thread			
		<b>A206</b>	
code (carbon steel)	code (stainless steel)	BSP thread size [inch]	NPT thread size [inch]
TI-A206-02-02	-	1/8	1/8
TI-A206-04-02	-	1/4	1/8
TI-A206-04-04	-	1/4	1/4
TI-A206-06-04	-	3/8	1/4
TI-A206-06-06	-	3/8	3/8
TI-A206-06-08	-	3/8	1/2
TI-A206-08-06	-	1/2	3/8
TI-A206-08-08	-	1/2	1/2
TI-A206-12-08	-	3/4	1/2
TI-A206-12-12	-	3/4	3/4
TI-A206-16-16	-	1	1
TI-A206-16-20	-	1	1.1/4
TI-A206-24-24	-	1.1/2	1.1/2
TI-A206-32-32	-	2	2

# HIGH PRESSURE - adapters

## NPT adapters

NPT male / female thread			
			
<b>A303</b>			
code (carbon steel)	code (stainless steel)	male thread size [inch]	female thread size [inch]
TI-A303-02-02	TI-A303-02-02-SS	1/8	1/8
TI-A303-02-04	TI-A303-02-04-SS	1/8	1/4
TI-A303-02-06	-	1/8	3/8
TI-A303-04-02	TI-A303-04-02-SS	1/4	1/8
TI-A303-04-04	TI-A303-04-04-SS	1/4	1/4
TI-A303-04-06	TI-A303-04-06-SS	1/4	3/8
TI-A303-04-08	TI-A303-04-08-SS	1/4	1/2
TI-A303-06-02	TI-A303-06-02-SS	3/8	1/8
TI-A303-06-04	TI-A303-06-04-SS	3/8	1/4
TI-A303-06-06	TI-A303-06-06-SS	3/8	3/8
TI-A303-06-08	TI-A303-06-08-SS	3/8	1/2
TI-A303-08-02	-	1/2	1/8
TI-A303-08-04	TI-A303-08-04-SS	1/2	1/4
TI-A303-08-06	TI-A303-08-06-SS	1/2	3/8
TI-A303-08-08	TI-A303-08-08-SS	1/2	1/2
TI-A303-08-12	TI-A303-08-12-SS	1/2	3/4
TI-A303-08-16	-	1/2	1
TI-A303-12-04	TI-A303-12-04-SS	3/4	1/4
TI-A303-12-06	TI-A303-12-06-SS	3/4	3/8
TI-A303-12-08	TI-A303-12-08-SS	3/4	1/2
TI-A303-12-12	TI-A303-12-12-SS	3/4	3/4
TI-A303-12-20	-	3/4	1.1/4
TI-A303-16-04	-	1	1/4
TI-A303-16-06	TI-A303-16-06-SS	1	3/8
TI-A303-16-08	TI-A303-16-08-SS	1	1/2
TI-A303-16-12	TI-A303-16-12-SS	1	3/4
-	TI-A303-16-16-SS	1	1
TI-A303-16-20	-	1	1.1/4
TI-A303-20-08	-	1.1/4	1/2
TI-A303-20-12	TI-A303-20-12-SS	1.1/4	3/4
TI-A303-20-16	TI-A303-20-16-SS	1.1/4	1
TI-A303-20-24	-	1.1/4	1.1/2
TI-A303-24-12	TI-A303-24-12-SS	1.1/2	3/4
TI-A303-24-16	-	1.1/2	1
TI-A303-24-20	TI-A303-24-20-SS	1.1/2	1.1/4
TI-A303-32-16	-	2	1
TI-A303-32-20	-	2	1.1/4
TI-A303-32-24	-	2	1.1/2

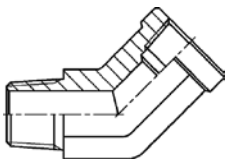
2 x NPT male thread			
			
<b>A301</b>			
code (carbon steel)	code (stainless steel)	thread size [inch]	thread size [inch]
TI-A301-02-02	TI-A301-02-02-SS	1/8	1/8
TI-A301-02-04	TI-A301-02-04-SS	1/8	1/4
TI-A301-02-06	TI-A301-02-06-SS	1/8	3/8
TI-A301-04-04	TI-A301-04-04-SS	1/4	1/4
TI-A301-04-06	TI-A301-04-06-SS	1/4	3/8
TI-A301-04-08	TI-A301-04-08-SS	1/4	1/2
TI-A301-04-12	-	1/4	3/4
TI-A301-06-06	TI-A301-06-06-SS	3/8	3/8
TI-A301-06-08	TI-A301-06-08-SS	3/8	1/2
TI-A301-06-12	-	3/8	3/4
TI-A301-08-08	TI-A301-08-08-SS	1/2	1/2
TI-A301-08-12	TI-A301-08-12-SS	1/2	3/4
TI-A301-08-16	TI-A301-08-16-SS	1/2	1
TI-A301-12-12	TI-A301-12-12-SS	3/4	3/4
TI-A301-12-16	TI-A301-12-16-SS	3/4	1
TI-A301-16-16	TI-A301-16-16-SS	1	1
TI-A301-16-20	-	1	1.1/4
TI-A301-16-24	-	1	1.1/2
TI-A301-20-20	TI-A301-20-20-SS	1.1/4	1.1/4
TI-A301-20-24	-	1.1/4	1.1/2
TI-A301-24-24	TI-A301-24-24-SS	1.1/2	1.1/2
TI-A301-24-32	-	1.1/2	2
TI-A301-32-32	TI-A301-32-32-SS	2	2

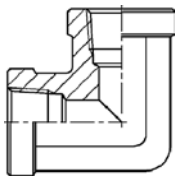
2 x NPT female thread			
			
<b>A302</b>			
code (carbon steel)	code (stainless steel)	thread size [inch]	thread size [inch]
TI-A302-02-02	TI-A302-02-02-SS	1/8	1/8
TI-A302-02-04	-	1/8	1/4
TI-A302-02-06	-	1/8	3/8
TI-A302-04-04	TI-A302-04-04-SS	1/4	1/4
TI-A302-04-06	-	1/4	3/8
TI-A302-04-08	-	1/4	1/2
TI-A302-04-12	-	1/4	3/4
TI-A302-06-06	TI-A302-06-06-SS	3/8	3/8
TI-A302-06-08	-	3/8	1/2
TI-A302-08-08	TI-A302-08-08-SS	1/2	1/2
TI-A302-08-12	-	1/2	3/4
TI-A302-12-12	TI-A302-12-12-SS	3/4	3/4
TI-A302-12-16	-	3/4	1
TI-A302-16-16	TI-A302-16-16-SS	1	1
TI-A302-20-20	TI-A302-20-20-SS	1.1/4	1.1/4
TI-A302-24-24	TI-A302-24-24-SS	1.1/2	1.1/2
TI-A302-32-32	TI-A302-32-32-SS	2	2

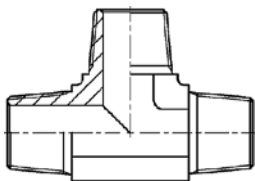


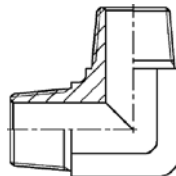
## HIGH PRESSURE - adapters

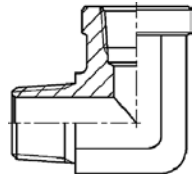
### NPT adapters

NPT male / female thread		
		
<b>A304</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A304-02-02	-	1/8
TI-A304-04-04	-	1/4
TI-A304-06-06	-	3/8
TI-A304-08-08	-	1/2
TI-A304-12-12	-	3/4
TI-A304-16-16	-	1
TI-A304-20-20	-	1.1/4
TI-A304-24-24	-	1.1/2

NPT female thread		
		
<b>A306</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A306-02-02	TI-A306-02-02-SS	1/8
TI-A306-04-04	-	1/4
TI-A306-06-06	TI-A306-06-06-SS	3/8
TI-A306-08-08	TI-A306-08-08-SS	1/2
TI-A306-12-12	TI-A306-12-12-SS	3/4
TI-A306-16-16	-	1
TI-A306-20-20	-	1.1/4
TI-A306-24-24	-	1.1/2
TI-A306-32-32	-	2

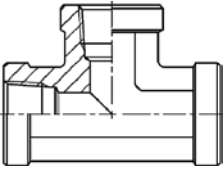
3 x NPT male thread		
		
<b>A308</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A308-02	TI-A308-02-SS	1/8
TI-A308-04	TI-A308-04-SS	1/4
TI-A308-06	TI-A308-06-SS	3/8
TI-A308-08	TI-A308-08-SS	1/2
TI-A308-12	TI-A308-12-SS	3/4
TI-A308-16	-	1

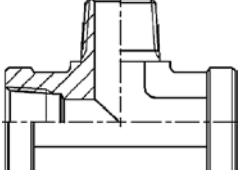
2 x NPT male thread		
		
<b>A305</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A305-02-02	TI-A305-02-02-SS	1/8
TI-A305-04-04	TI-A305-04-04-SS	1/4
TI-A305-04-06	-	1/4
TI-A305-06-06	TI-A305-06-06-SS	3/8
TI-A305-08-08	TI-A305-08-08-SS	1/2
TI-A305-12-12	-	3/4
TI-A305-16-16	-	1
TI-A305-20-20	-	1.1/4
TI-A305-24-24	-	1.1/2
TI-A305-32-32	-	2

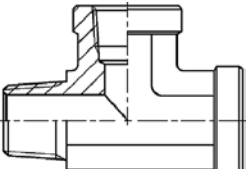
NPT male / female thread		
		
<b>A307</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A307-02-02	TI-A307-02-02-SS	1/8
TI-A307-04-02	-	1/4
TI-A307-04-04	TI-A307-04-04-SS	1/4
TI-A307-06-06	TI-A307-06-06-SS	3/8
TI-A307-08-08	TI-A307-08-08-SS	1/2
TI-A307-12-12	TI-A307-12-12-SS	3/4
TI-A307-16-16	TI-A307-16-16-SS	1
TI-A307-20-20	TI-A307-20-20-SS	1.1/4
TI-A307-24-24	-	1.1/2
TI-A307-32-32	-	2

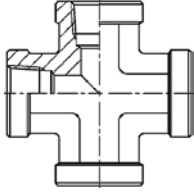
# HIGH PRESSURE - adapters

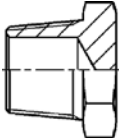
## NPT adapters

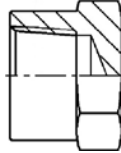
NPT female thread		
		
<b>A309</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A309-02	TI-A309-02-SS	1/8
TI-A309-04	TI-A309-04-SS	1/4
TI-A309-06	TI-A309-06-SS	3/8
TI-A309-08	TI-A309-08-SS	1/2
TI-A309-12	TI-A309-12-SS	3/4
TI-A309-16	TI-A309-16-SS	1
TI-A309-20	-	1.1/4
TI-A309-24	-	1.1/2
TI-A309-32	-	2

NPT male / female thread		
		
<b>A310</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A310-02	-	1/8
TI-A310-04	-	1/4
TI-A310-06	-	3/8
TI-A310-08	-	1/2
TI-A310-12	-	3/4
TI-A310-16	-	1
TI-A310-20	-	1.1/4
TI-A310-24	-	1.1/2
TI-A310-32	-	2

NPT male / female thread		
		
<b>A311</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A311-02	-	1/8
TI-A311-04	-	1/4
TI-A311-06	-	3/8
TI-A311-08	-	1/2
TI-A311-12	-	3/4
TI-A311-16	-	1
TI-A311-20	-	1.1/4
TI-A311-24	-	1.1/2
TI-A311-32	-	2

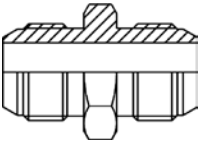
NPT female thread		
		
<b>A312</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A312-02	-	1/8
TI-A312-04	-	1/4
TI-A312-06	-	3/8
TI-A312-08	-	1/2
TI-A312-12	-	3/4
TI-A312-16	-	1
TI-A312-20	-	1.1/4
TI-A312-24	-	1.1/2

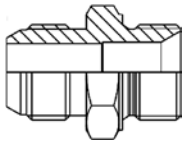
NPT male thread		
		
<b>A313</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A313-02	TI-A313-02-SS	1/8
TI-A313-04	TI-A313-04-SS	1/4
TI-A313-06	TI-A313-06-SS	3/8
TI-A313-08	TI-A313-08-SS	1/2
TI-A313-12	TI-A313-12-SS	3/4
TI-A313-16	TI-A313-16-SS	1
TI-A313-20	TI-A313-20-SS	1.1/4
TI-A313-24	TI-A313-24-SS	1.1/2
TI-A313-32	TI-A313-32-SS	2

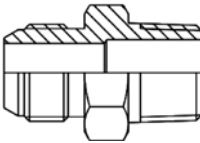
NPT female thread		
		
<b>A314</b>		
code (carbon steel)	code (stainless steel)	thread size [inch]
TI-A314-02	TI-A314-02-SS	1/8
TI-A314-04	TI-A314-04-SS	1/4
TI-A314-06	TI-A314-06-SS	3/8
TI-A314-08	TI-A314-08-SS	1/2
TI-A314-12	TI-A314-12-SS	3/4
TI-A314-16	TI-A314-16-SS	1
TI-A314-20	TI-A314-20-SS	1.1/4
TI-A314-24	TI-A314-24-SS	1.1/2
TI-A314-32	TI-A314-32-SS	2

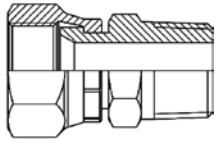
# HIGH PRESSURE - adapters

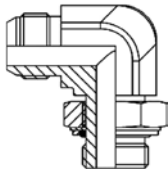
## JIS adapters (TOYOTA)

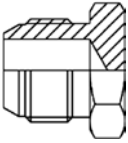
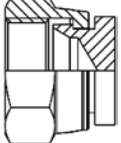
BSP 60° male thread	
	
<b>A401</b>	
code (carbon steel)	thread size [inch]
TI-A401-04-04	1/4
TI-A401-06-06	3/8
TI-A401-08-08	1/2
TI-A401-12-12	3/4
TI-A401-16-16	1

BSP 60° male thread	
	
<b>A402</b>	
code (carbon steel)	thread size [inch]
TI-A402-04-04	1/4
TI-A402-06-06	3/8
TI-A402-08-08	1/2
TI-A402-12-12	3/4
TI-A402-16-16	1

BSP 60° male thread / BSPT	
	
<b>A403</b>	
code (carbon steel)	thread size [inch]
TI-A403-02-02	1/8
TI-A403-04-04	1/4
TI-A403-06-06	3/8
TI-A403-08-08	1/2
TI-A403-12-12	3/4
TI-A403-16-16	1
TI-A403-20-20	1.1/4
TI-A403-24-24	1.1/2

BSP 60° female / BSPT male thread	
	
<b>A404</b>	
code (carbon steel)	thread size [inch]
TI-A404-04-04	1/4
TI-A404-06-06	3/8
TI-A404-08-08	1/2
TI-A404-12-12	3/4
TI-A404-16-16	1

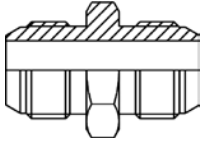
BSP 60° male thread / BSP	
	
<b>A405</b>	
code (carbon steel)	thread size [inch]
TI-A405-04-04	1/4
TI-A405-06-06	3/8
TI-A405-08-08	1/2
TI-A405-12-12	3/4
TI-A405-16-16	1

BSP 60° male thread		BSP 60° female thread
		
<b>A406</b>		<b>A407</b>
code (carbon steel)	code (carbon steel)	thread size [inch]
TI-A406-04-04	TI-A407-04-04	1/4
TI-A406-06-06	TI-A407-06-06	3/8
TI-A406-08-08	TI-A407-08-08	1/2
TI-A406-12-12	TI-A407-12-12	3/4
TI-A406-16-16	TI-A407-16-16	1

## HIGH PRESSURE - adapters

### JIS adapters (KOMATSU)

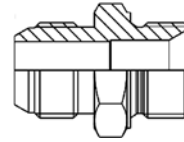
60° metric male thread



**A501**

code (carbon steel)	thread size [mm]
TI-A501-14-14	M14x1.5
TI-A501-16-16	M16x1.5
TI-A501-18-18	M18x1.5
TI-A501-22-22	M22x1.5
TI-A501-24-24	M24x1.5
TI-A501-30-30	M30x1.5
TI-A501-33-33	M33x1.5

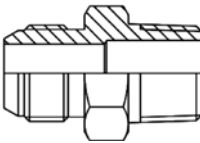
60° metric / BSPT male thread



**A502**

code (carbon steel)	thread size [mm]	thread size [inch]
TI-A502-14-04	M14x1.5	1/4
TI-A502-18-06	M18x1.5	3/8
TI-A502-22-08	M22x1.5	1/2
TI-A502-24-10	M24x1.5	5/8
TI-A502-30-12	M30x1.5	3/4
TI-A502-33-16	M33x1.5	1

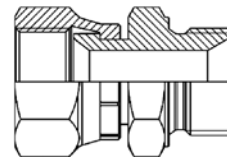
60° metric / BSPT male thread



**A503**

code (carbon steel)	thread size [mm]	thread size [inch]
TI-A503-14-04	M14x1.5	1/4
TI-A503-16-06	M16x1.5	3/8
TI-A503-18-06	M18x1.5	3/8
TI-A503-22-08	M22x1.5	1/2
TI-A503-24-10	M24x1.5	5/8
TI-A503-30-12	M30x1.5	3/4
TI-A503-33-16	M33x1.5	1

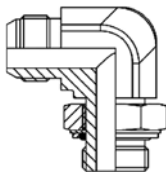
60° metric female / BSP 60° male thread



**A504**

code (carbon steel)	thread size [mm]	thread size [inch]
TI-A504-14-04	M14x1.5	1/4
TI-A504-18-06	M18x1.5	3/8
TI-A504-22-08	M22x1.5	1/2
TI-A504-30-12	M30x1.5	3/4

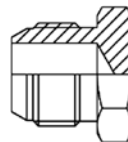
60° metric / BSP male thread



**A505**

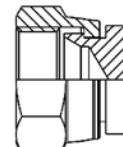
code (carbon steel)	thread size [mm]	thread size [inch]
TI-A505-14-04	M14x1.5	1/4
TI-A505-16-06	M16x1.5	3/8
TI-A505-18-06	M18x1.5	3/8
TI-A505-22-08	M22x1.5	1/2
TI-A505-30-12	M30x1.5	3/4
TI-A505-33-16	M33x1.5	1

60° metric male thread



**A506**

60° metric female thread



**A507**

code (carbon steel)	code (carbon steel)	thread size [mm]
TI-A506-14-14	TI-A507-14-14	M14x1.5
TI-A506-16-16	TI-A507-16-16	M16x1.5
TI-A506-18-18	TI-A507-18-18	M18x1.5
TI-A506-22-22	TI-A507-22-22	M22x1.5
TI-A506-24-24	TI-A507-24-24	M24x1.5
TI-A506-30-30	TI-A507-30-30	M30x1.5
TI-A506-33-33	TI-A507-33-33	M33x1.5

# HIGH PRESSURE - adapters

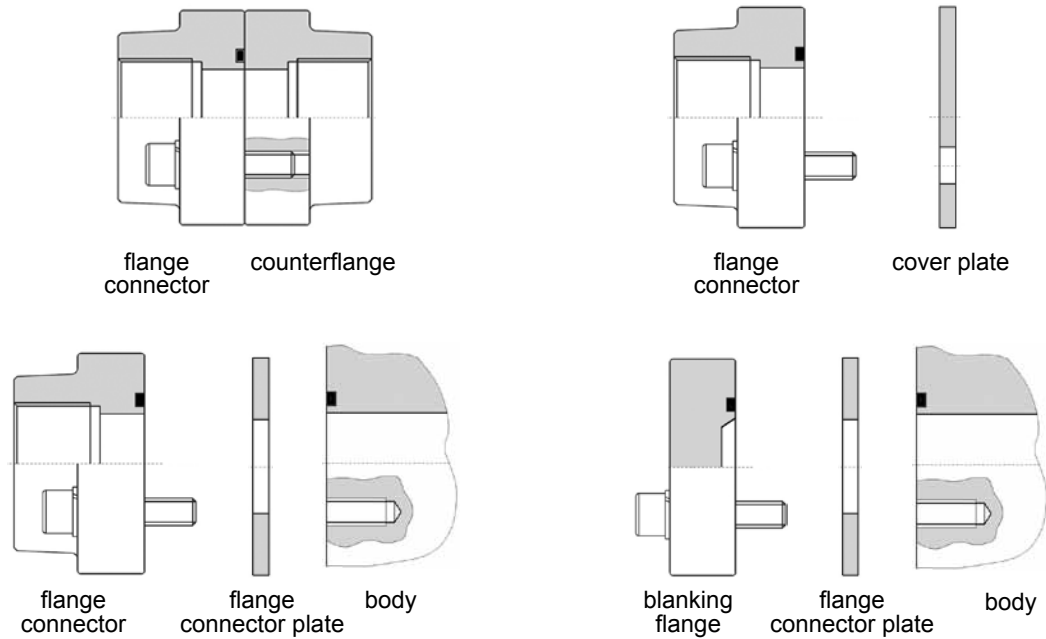
## SAE flange connectors

**Material:** Zinc-plated steel (standard), AISI 316L steel (option)

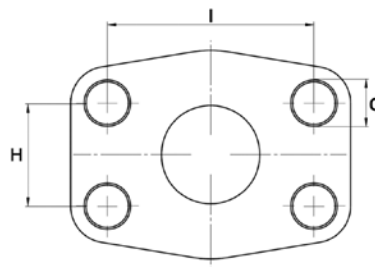
**Working temp.:** From -20°C up to +100°C (NBR seal), from -20°C up to +200°C (Viton seal)

Compact SAE flange connectors, available in two types - threaded (metric or imperial BSP) or butt weld. Equipped with a set of bolts and O-ring seal (not applicable to counterflanges).

### Examples of flange connections



### Basic dimensions of SAE flange



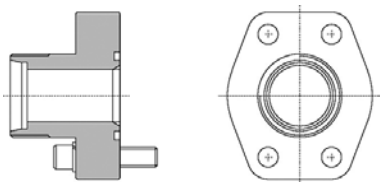
SAE 3000				
flange dimension [inch]	dimension I [mm]	dimension H [mm]	bolt hole diam. C [mm]	bolt size [mm]
1/2	38.1	17.5	9	M8
3/4	47.6	22.3	11	M10
1	52.4	26.2		
1.1/4	58.7	30.2	11.5	M12
1.1/2	69.9	35.7	13.5	
2	77.8	42.9		
2.1/2	88.9	50.8		
3	106.4	61.9	17	M16
3.1/2	120.7	69.9		
4	130.2	77.8		
5	152.4	92.1		

SAE 6000				
flange dimension [inch]	dimension I [mm]	dimension H [mm]	bolt hole diam. C [mm]	bolt size [mm]
1/2	40.5	18.2	9	M8
3/4	50.8	23.8	11	M10
1	57.2	27.8	13	M12
1.1/4	66.6	31.8	15	M14
1.1/2	79.3	36.5	17	M16
2	96.8	44.5	21	M20
2.1/2	123.8	58.7	25	M24
3	152.4	71.4	32	M30

# HIGH PRESSURE - adapters

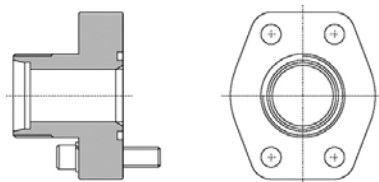
## SAE flange connectors

SAE flange connector 3000 / DIN 2353



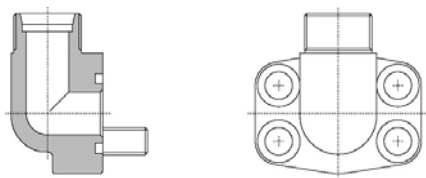
press. [bar]	code	flange dimension [inch]	pipe O.D. [mm]	thread size [mm]	bolt size [mm]
348	HK-C3-M-08-12S	1/2	12	20x1.5	4 x M8
	HK-C3-M-08-15L		15	22x1.5	
	HK-C3-M-08-16S		16	24x1.5	
	HK-C3-M-12-16S	3/4	16	24x1.5	4 x M10
	HK-C3-M-12-20S		20	30x2	
	HK-C3-M-12-22L		22	30x2	
	HK-C3-M-16-20S	1	20	30x2	4 x M12
	HK-C3-M-16-25S		25	36x2	
	HK-C3-M-16-28L		28	36x2	
278	HK-C3-M-20-25S	1.1/4	25	36x2	4 x M14
	HK-C3-M-20-30S		30	42x2	
	HK-C3-M-20-35L		35	45x2	
210	HK-C3-M-24-35L	1.1/2	35	45x2	4 x M16
	HK-C3-M-24-38S		38	52x2	
	HK-C3-M-24-42L		42	52x2	
	HK-C3-M-32-38S	2	38	52x2	4 x M12
	HK-C3-M-32-42L		42	52x2	

SAE flange connector 6000 / DIN 2353



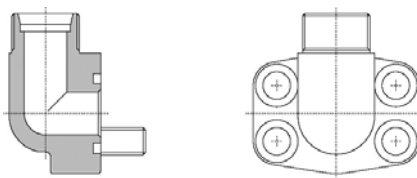
press. [bar]	code	flange dimension [inch]	pipe O.D. [mm]	thread size [mm]	bolt size [mm]
420	HK-C6-M-08-12S	1/2	12	20x1.5	4 x M8
	HK-C6-M-08-14S		14	22x1.5	
	HK-C6-M-08-16S		16	24x1.5	
	HK-C6-M-12-16S	3/4	16	24x1.5	4 x M10
	HK-C6-M-12-20S		20	30x2	
	HK-C6-M-12-22L		22	30x2	
	HK-C6-M-16-20S	1	20	30x2	4 x M12
	HK-C6-M-16-25S		25	36x2	
	HK-C6-M-16-28L		28	36x2	
	HK-C6-M-20-25S	1.1/4	25	36x2	4 x M14
	HK-C6-M-20-30S		30	42x2	
	HK-C6-M-20-35L		35	45x2	
	HK-C6-M-24-30S	1.1/2	30	45x2	4 x M16
	HK-C6-M-24-38S		38	52x2	
	HK-C6-M-24-42L		42	52x2	

SAE 3000 90° flange connector / DIN 2353



press. [bar]	code	flange dimension [inch]	pipe O.D. [mm]	thread size [mm]	bolt size [mm]
348	HK-C3-M-90-08-12S	1/2	12	20x1.5	4 x M8
	HK-C3-M-90-08-15L		15	22x1.5	
	HK-C3-M-90-08-16S		16	24x1.5	
	HK-C3-M-90-12-16S	3/4	16	24x1.5	4 x M10
	HK-C3-M-90-12-20S		20	30x2	
	HK-C3-M-90-12-22L		22	30x2	
	HK-C3-M-90-16-20S	1	20	30x2	4 x M12
	HK-C3-M-90-16-25S		25	36x2	
	HK-C3-M-90-16-28L		28	36x2	
278	HK-C3-M-90-20-25S	1.1/4	25	36x2	4 x M14
	HK-C3-M-90-20-30S		30	42x2	
	HK-C3-M-90-20-35L		35	45x2	
210	HK-C3-M-90-24-35L	1.1/2	35	45x2	4 x M16
	HK-C3-M-90-24-38S		38	52x2	
	HK-C3-M-90-24-42L		42	52x2	

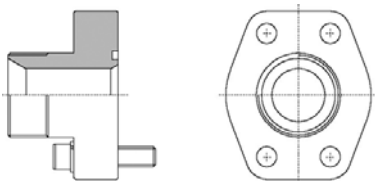
SAE 6000 90° flange connector / DIN 2353

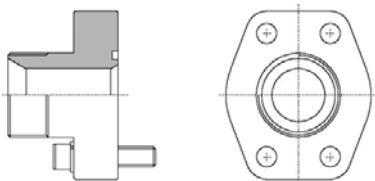


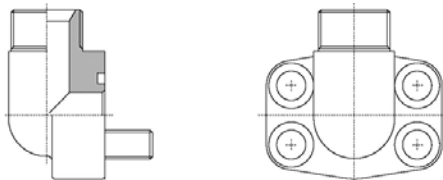
press. [bar]	code	flange dimension [inch]	pipe O.D. [mm]	thread size [mm]	bolt size [mm]
420	HK-C6-M-90-08-12S	1/2	12	20x1.5	4 x M8
	HK-C6-M-90-08-14S		14	22x1.5	
	HK-C6-M-90-08-16S		16	24x1.5	
	HK-C6-M-90-12-16S	3/4	16	24x1.5	4 x M10
	HK-C6-M-90-12-20S		20	30x2	
	HK-C6-M-90-12-22L		22	30x2	
	HK-C6-M-90-16-20S	1	20	30x2	4 x M12
	HK-C6-M-90-16-25S		25	36x2	
	HK-C6-M-90-16-28L		28	36x2	
	HK-C6-M-90-20-25S	1.1/4	25	36x2	4 x M14
	HK-C6-M-90-20-30S		30	42x2	
	HK-C6-M-90-20-35L		35	45x2	
	HK-C6-M-90-24-30S	1.1/2	30	42x2	4 x M16
	HK-C6-M-90-24-38S		38	52x2	
	HK-C6-M-90-24-42L		42	52x2	

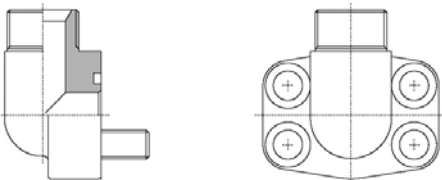
# HIGH PRESSURE - adapters

## SAE flange connectors

SAE 3000 flange connector / BSP male thread 60°				
				
press. [bar]	code	flange dimension [inch]	thread size [inch]	bolt size [mm]
348	HK-C3-B-08-06	1/2	3/8	4 x M8
	HK-C3-B-08-08		1/2	
	HK-C3-B-08-12		3/4	
	HK-C3-B-12-08	3/4	1/2	4 x M10
	HK-C3-B-12-12		3/4	
	HK-C3-B-12-16		1	
	HK-C3-B-16-12	1	3/4	
	HK-C3-B-16-16		1	
	HK-C3-B-16-20		1.1/4	
278	HK-C3-B-20-16	1.1/4	1	
	HK-C3-B-20-20		1.1/4	
	HK-C3-B-20-24		1.1/2	
210	HK-C3-B-24-20	1.1/2	1.1.4	4 x M12
	HK-C3-B-24-24		1.1/2	
	HK-C3-B-24-32		2	
	HK-C3-B-32-24	2	1.1/2	
	HK-C3-B-32-32		2	

SAE 6000 flange connector / BSP male thread 60°				
				
press. [bar]	code	flange dimension [inch]	thread size [inch]	bolt size [mm]
420	HK-C6-B-08-06	1/2	3/8	4 x M8
	HK-C6-B-08-08		1/2	
	HK-C6-B-08-12		3/4	
	HK-C6-B-12-08	3/4	1/2	4 x M10
	HK-C6-B-12-12		3/4	
	HK-C6-B-12-16		1	
	HK-C6-B-16-12	1	3/4	4 x M12
	HK-C6-B-16-16		1	
	HK-C6-B-16-20		1.1/4	
	HK-C6-B-20-16	1.1/4	1	4 x M14
	HK-C6-B-20-20		1.1/4	
	HK-C6-B-20-24		1.1/2	
	HK-C6-B-24-20	1.1/2	1.1/4	4 x M16
	HK-C6-B-24-24		1.1/2	

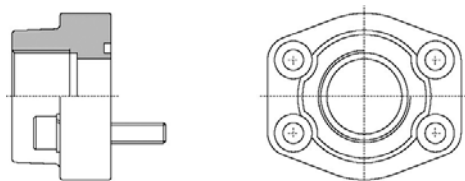
SAE 3000 90° flange connector / BSP male thread 60°				
				
press. [bar]	code	flange dimension [inch]	thread size [inch]	bolt size [mm]
348	HK-C3-B-90-08-06	1/2	3/8	4 x M8
	HK-C3-B-90-08-08		1/2	
	HK-C3-B-90-08-12		3/4	
	HK-C3-B-90-12-08	3/4	1/2	4 x M10
	HK-C3-B-90-12-12		3/4	
	HK-C3-B-90-12-16		1	
	HK-C3-B-90-16-12	1	3/4	
	HK-C3-B-90-16-16		1	
	HK-C3-B-90-16-20		1.1/4	
278	HK-C3-B-90-20-16	1.1/4	1	
	HK-C3-B-90-20-20		1.1/4	
	HK-C3-B-90-20-24		1.1/2	
210	HK-C3-B-90-24-20	1.1/2	1.1.4	4 x M12
	HK-C3-B-90-24-24		1.1/2	

SAE 6000 90° flange connector / BSP male thread 60°				
				
press. [bar]	code	flange dimension [inch]	thread size [inch]	bolt size [mm]
420	HK-C6-B-90-08-06	1/2	3/8	4 x M8
	HK-C6-B-90-08-08		1/2	
	HK-C6-B-90-08-12		3/4	
	HK-C6-B-90-12-08	3/4	1/2	4 x M10
	HK-C6-B-90-12-12		3/4	
	HK-C6-B-90-12-16		1	
	HK-C6-B-90-16-12	1	3/4	4 x M12
	HK-C6-B-90-16-16		1	
	HK-C6-B-90-16-20		1.1/4	
	HK-C6-B-90-20-16	1.1/4	1	4 x M14
	HK-C6-B-90-20-20		1.1/4	
	HK-C6-B-90-20-24		1.1/2	
	HK-C6-B-90-24-20	1.1/2	1.1/4	4 x M16
	HK-C6-B-90-24-24		1.1/2	

# HIGH PRESSURE - adapters

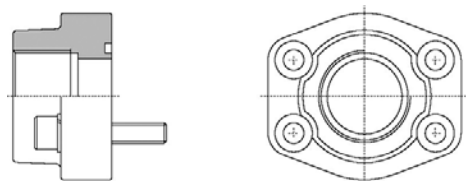
## SAE flange connectors

SAE 3000 flange connector / BSP female thread



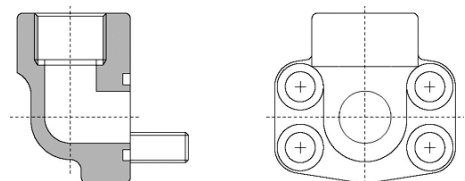
press. [bar]	code	flange dimension [inch]	thread size [inch]	bolt size [mm]
348	HK-D3-B-08-06	1/2	3/8	4 x M8
	HK-D3-B-08-08		1/2	
	HK-D3-B-12-12	3/4	3/4	4 x M10
	HK-D3-B-16-16	1	1	
278	HK-D3-B-20-20	1.1/4	1.1/4	4 x M12
210	HK-D3-B-24-24	1.1/2	1.1/2	
	HK-D3-B-32-32	2	2	
175	HK-D3-B-40-40	2.1/2	2.1/2	
138	HK-D3-B-48-48	3	3	4 x M16
35	HK-D3-B-56-56	3.1/2	3.1/2	
	HK-D3-B-64-64	4	4	
	HK-D3-B-80-80	5	5	

SAE 6000 flange connector / BSP female thread



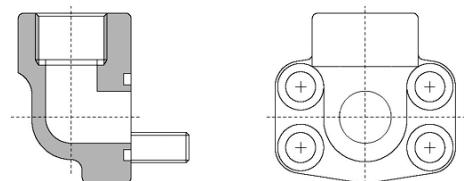
press. [bar]	code	flange dimension [inch]	thread size [inch]	bolt size [mm]
420	HK-D6-B-08-06	1/2	3/8	4 x M8
	HK-D6-B-08-08		1/2	
	HK-D6-B-12-12	3/4	3/4	4 x M10
	HK-D6-B-16-16	1	1	4 x M12
	HK-D6-B-20-20	1.1/4	1.1/4	4 x M14
	HK-D6-B-24-24	1.1/2	1.1/2	4 x M16
	HK-D6-B-32-32	2	2	4 x M20
	HK-D6-B-40-40	2.1/2	2.1/2	4 x M24
	HK-D6-B-48-48	3	3	4 x M30

SAE 3000 90° flange connector / BSP female thread



press. [bar]	code	flange dimension [inch]	thread size [inch]	bolt size [mm]
348	HK-D3-B-90-08-08	1/2	1/2	4 x M8
	HK-D3-B-90-12-12	3/4	3/4	4 x M10
	HK-D3-B-90-16-16	1	1	
278	HK-D3-B-90-20-20	1.1/4	1.1/4	4 x M12
210	HK-D3-B-90-24-24	1.1/2	1.1/2	
	HK-D3-B-90-32-32	2	2	
175	HK-D3-B-90-40-40	2.1/2	2.1/2	

SAE 6000 90° flange connector / BSP female thread

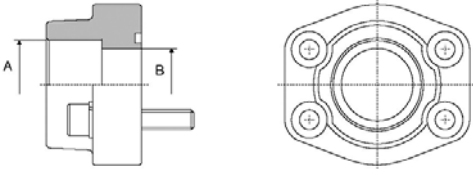


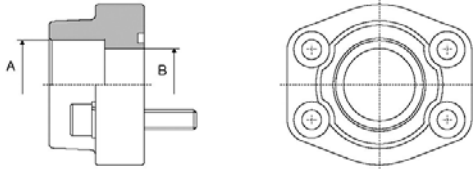
press. [bar]	code	flange dimension [inch]	thread size [inch]	bolt size [mm]
420	HK-D6-B-90-08-08	1/2	1/2	4 x M8
	HK-D6-B-90-12-12	3/4	3/4	4 x M10
	HK-D6-B-90-16-16	1	1	4 x M12
	HK-D6-B-90-20-20	1.1/4	1.1/4	4 x M14
	HK-D6-B-90-24-24	1.1/2	1.1/2	4 x M16
	HK-D6-B-90-32-32	2	2	4 x M20

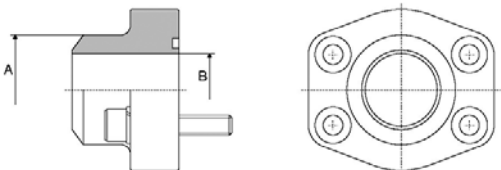


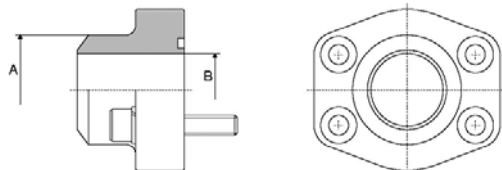
# HIGH PRESSURE - adapters

## SAE flange connectors

SAE 3000 flange with butt weld connection					
					
press. [bar]	code	flange dimension [inch]	dimension A [mm]	dimension B [mm]	bolt size [mm]
348	HK-D3-SA-06-17	3/8	17.5	13	4 x M8
	HK-D3-SA-08-21	1/2	21.6	13	
	HK-D3-SA-12-27	3/4	27.2	19	
278	HK-D3-SA-16-34	1	34.1	25	4 x M10
	HK-D3-SA-20-42	1.1/4	42.8	31	
210	HK-D3-SA-24-48	1.1/2	48.6	38	4 x M12
	HK-D3-SA-32-61	2	61	50	
175	HK-D3-SA-40-76	2.1/2	76.6	63	4 x M16
138	HK-D3-SA-48-90	3	90.5	73	
35	HK-D3-SA-56-103	3.1/2	103	89	
	HK-D3-SA-64-115	4	115.3	99	
	HK-D3-SA-80-142	5	142	120	

SAE 6000 flange with butt weld connection					
					
press. [bar]	code	flange dimension [inch]	dimension A [mm]	dimension B [mm]	bolt size [mm]
420	HK-D6-SA-06-17	3/8	17.5	13	4 x M8
	HK-D6-SA-08-21	1/2	21.6	13	
	HK-D6-SA-12-27	3/4	27.2	19	4 x M10
	HK-D6-SA-16-34	1	34.5	25	4 x M12
	HK-D6-SA-20-42	1.1/4	42.8	31	4 x M14
	HK-D6-SA-24-48	1.1/2	48.6	38	4 x M16
	HK-D6-SA-32-61	2	61	50	4 x M20
	HK-D6-SA-40-76	2.1/2	76.6	63	4 x M24
	HK-D6-SA-48-90	3	90.5	75	4 x M30

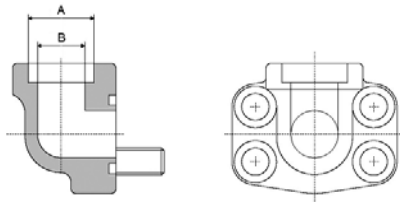
SAE 3000 flange with butt weld connection					
					
press. [bar]	code	flange dimension [inch]	dimension A [mm]	dimension B [mm]	bolt size [mm]
348	HK-D3-SB-06-17	3/8	17.5	10	4 x M8
	HK-D3-SB-08-21	1/2	21.6	13	
	HK-D3-SB-12-27	3/4	27.2	19	4 x M10
	HK-D3-SB-16-34	1	34.5	25	
278	HK-D3-SB-20-42	1.1/4	42.8	31	4 x M12
210	HK-D3-SB-24-48	1.1/2	48.6	38	
	HK-D3-SB-32-61	2	61	50	
175	HK-D3-SB-40-76	2.1/2	76.6	63	4 x M16
138	HK-D3-SB-48-89	3	89	73	
	HK-D3-SB-56-103	3.1/2	103	89	
	HK-D3-SB-64-115	4	115	99	
35	HK-D3-SB-80-142	5	142	120	

SAE 6000 flange with butt weld connection					
					
press. [bar]	code	flange dimension [inch]	dimension A [mm]	dimension B [mm]	bolt size [mm]
420	HK-D6-SB-06-17	3/8	17.5	10	4 x M8
	HK-D6-SB-08-21	1/2	21.6	13	
	HK-D6-SB-12-27	3/4	27.2	18	4 x M10
	HK-D6-SB-16-34	1	34.5	22	4 x M12
	HK-D6-SB-20-42	1.1/4	42.8	28	4 x M14
	HK-D6-SB-24-48	1.1/2	48.6	32	4 x M16
	HK-D6-SB-32-61	2	61	41	4 x M20
	HK-D6-SB-40-76	2.1/2	76.6	50	4 x M24
	HK-D6-SB-48-90	3	90	58	4 x M30

# HIGH PRESSURE - adapters

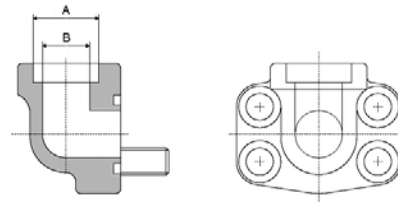
## SAE flange connectors

SAE 3000 90° flange with butt weld connection



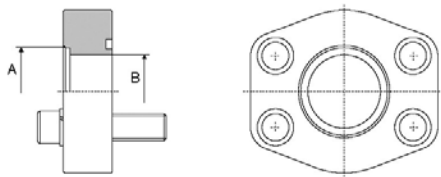
press. [bar]	code	flange dimension [inch]	dimension A [mm]	dimension B [mm]	bolt size [mm]
348	HK-D3-SA-90-08-21	1/2	21.6	13	4 x M8
	HK-D3-SA-90-12-27	3/4	27.2	19	4 x M10
	HK-D3-SA-90-16-34	1	34.1	25	
278	HK-D3-SA-90-20-42	1.1/4	42.8	31	4 x M12
210	HK-D3-SA-90-24-48	1.1/2	48.6	38	
	HK-D3-SA-90-32-61	2	61	50	
175	HK-D3-SA-90-40-76	2.1/2	76.6	60	

SAE 6000 90° flange with butt weld connection



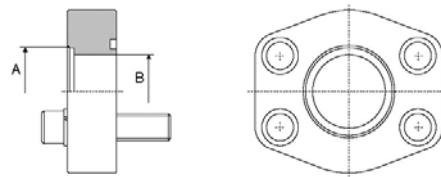
press. [bar]	code	flange dimension [inch]	dimension A [mm]	dimension B [mm]	bolt size [mm]
420	HK-D6-SA-90-08-21	1/2	21.6	13	4 x M8
	HK-D6-SA-90-12-27	3/4	27.2	19	4 x M10
	HK-D6-SA-90-16-34	1	34.1	25	4 x M12
	HK-D6-SA-90-20-42	1.1/4	42.8	31	4 x M14
	HK-D6-SA-90-24-48	1.1/2	48.6	38	4 x M16
	HK-D6-SA-90-32-61	2	61	50	4 x M20

SAE 3000 90° flange with butt weld connection



press. [bar]	code	flange dimension [inch]	dimension A [mm]	dimension B [mm]	bolt size [mm]
348	HK-E3-SA-08-17	1/2	17.5	13	4 x M8
	HK-E3-SA-08-21		21.6		
	HK-E3-SA-12-21	3/4	21.6	19	4 x M10
	HK-E3-SA-12-27		27.2		
	HK-E3-SA-16-27	1	27.2	25	
	HK-E3-SA-16-34		34.5		
278	HK-E3-SA-20-34	1.1/4	34.5	31	4 x M12
	HK-E3-SA-20-42		42.8		
210	HK-E3-SA-24-42	1.1/2	42.8	38	
	HK-E3-SA-24-48		48.6		
	HK-E3-SA-32-48	2	48.6	50	
	HK-E3-SA-32-61		61		
175	HK-E3-SA-40-61	2.1/2	61	63	
	HK-E3-SA-40-76		76.6		
138	HK-E3-SA-48-76	3	76.6	73	4 x M16
	HK-E3-SA-48-90		90.5		
35	HK-E3-SA-56-90	3.1/2	90.5	89	
	HK-E3-SA-56-103		103		
	HK-E3-SA-64-103	4	103	99	
	HK-E3-SA-64-115		115.5		
	HK-E3-SA-72-115	5	115.5	120	
	HK-E3-SA-72-142		142.5		

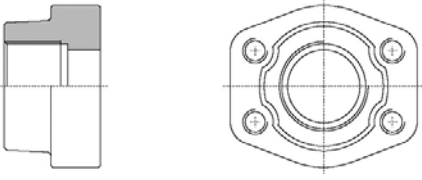
SAE 6000 90° flange with butt weld connection

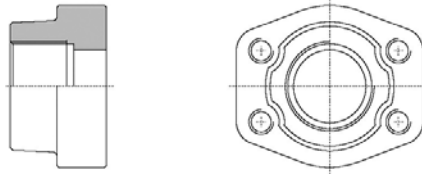


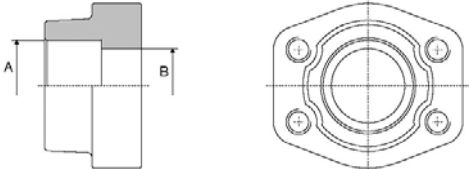
press. [bar]	code	flange dimension [inch]	dimension A [mm]	dimension B [mm]	bolt size [mm]
420	HK-E6-SA-08-17	1/2	17.5	13	4 x M8
	HK-E6-SA-08-21		21.6		
	HK-E6-SA-12-21	3/4	21.6	19	4 x M10
	HK-E6-SA-12-27		27.2		
	HK-E6-SA-16-27	1	27.2	25	4 x M12
	HK-E6-SA-16-34		34.5		
	HK-E6-SA-20-34	1.1/4	34.5	31	4 x M14
	HK-E6-SA-20-42		42.8		
	HK-E6-SA-24-42	1.1/2	42.8	38	4 x M16
	HK-E6-SA-24-48		48.6		
	HK-E6-SA-32-48	2	48.6	50	4 x M20
	HK-E6-SA-32-61		61		

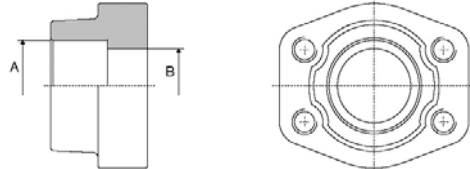
# HIGH PRESSURE - adapters

## SAE flange connectors

SAE 3000 counterflange / BSP female thread				
				
press. [bar]	code	flange dimension [inch]	thread size [inch]	bolt hole thread [mm]
348	HK-D3-BX-08-06	1/2	3/8	M8
	HK-D3-BX-08-08		1/2	
	HK-D3-BX-12-12	3/4	3/4	M10
	HK-D3-BX-16-16	1	1	
278	HK-D3-BX-20-20	1.1/4	1.1/4	M12
210	HK-D3-BX-24-24	1.1/2	1.1/2	
	HK-D3-BX-32-32	2	2	
175	HK-D3-BX-40-40	2.1/2	2.1/2	M16
138	HK-D3-BX-48-48	3	3	
35	HK-D3-BX-56-56	3.1/2	3.1/2	
	HK-D3-BX-64-64	4	4	
	HK-D3-BX-80-80	5	5	

SAE 6000 counterflange / BSP female thread				
				
press. [bar]	code	flange dimension [inch]	thread size [inch]	bolt hole thread [mm]
420	HK-D6-BX-08-06	1/2	3/8	M8
	HK-D6-BX-08-08		1/2	
	HK-D6-BX-12-12	3/4	3/4	M10
	HK-D6-BX-16-16	1	1	M12
	HK-D6-BX-20-20	1.1/4	1.1/4	M14
	HK-D6-BX-24-24	1.1/2	1.1/2	M16
	HK-D6-BX-32-32	2	2	M20
	HK-D6-BX-40-40	2.1/2	2.1/2	M24
	HK-D6-BX-48-48	3	3	M30

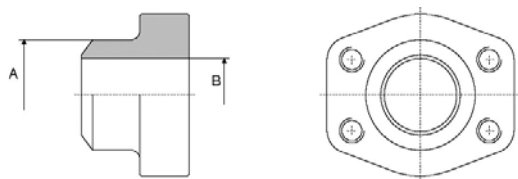
SAE 3000 counterflange with butt weld connection					
					
press. [bar]	code	flange dimension [inch]	dimension A [mm]	dimension B [mm]	bolt hole thread [mm]
348	HK-D3-SAX-06	3/8	17.5	13	M8
	HK-D3-SAX-08	1/2	21.6	13	
	HK-D3-SAX-12	3/4	27.2	19	M10
	HK-D3-SAX-16	1	34.1	25	
278	HK-D3-SAX-20	1.1/4	42.8	31	M12
210	HK-D3-SAX-24	1.1/2	48.6	38	
	HK-D3-SAX-32	2	61	50	
175	HK-D3-SAX-40	2.1/2	76.6	63	M16
138	HK-D3-SAX-48	3	90.5	73	
35	HK-D3-SAX-56	3.1/2	103	89	
	HK-D3-SAX-64	4	115.3	99	
	HK-D3-SAX-80	5	142	120	

SAE 6000 counterflange with butt weld connection					
					
press. [bar]	code	flange dimension [inch]	dimension A [mm]	dimension B [mm]	bolt hole thread [mm]
420	HK-D6-SAX-06	3/8	17.5	13	M8
	HK-D6-SAX-08	1/2	21.6	13	
	HK-D6-SAX-12	3/4	27.2	19	M10
	HK-D6-SAX-16	1	34.1	25	M12
	HK-D6-SAX-20	1.1/4	42.8	31	M14
	HK-D6-SAX-24	1.1/2	48.6	38	M16
	HK-D6-SAX-32	2	61	50	M20
	HK-D6-SAX-40	2.1/2	76.6	63	M24
	HK-D6-SAX-48	3	90.5	73	M30

# HIGH PRESSURE - adapters

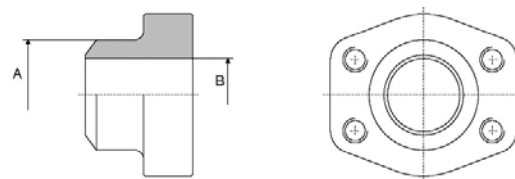
## SAE flange connectors

SAE 3000 counterflange with butt weld connection



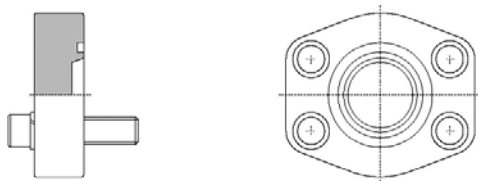
press. [bar]	code	flange dimension [inch]	dimension A [mm]	dimension B [mm]	bolt hole thread [mm]
348	HK-D3-SBX-06	3/8	17.5	10	M8
	HK-D3-SBX-08	1/2	21.6	13	
	HK-D3-SBX-12	3/4	27.2	19	M10
	HK-D3-SBX-16	1	34.1	25	
278	HK-D3-SBX-20	1.1/4	42.8	31	M12
210	HK-D3-SBX-24	1.1/2	48.6	38	
	HK-D3-SBX-32	2	61	50	
175	HK-D3-SBX-40	2.1/2	76.6	63	
138	HK-D3-SBX-48	3	90.5	73	M16
35	HK-D3-SBX-56	3.1/2	103	89	
	HK-D3-SBX-64	4	115	99	
	HK-D3-SBX-80	5	142	120	

SAE 6000 counterflange with butt weld connection



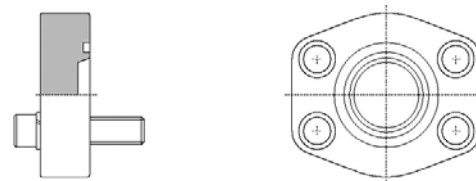
press. [bar]	code	flange dimension [inch]	dimension A [mm]	dimension B [mm]	bolt hole thread [mm]
420	HK-D6-SBX-06	3/8	17.5	10	M8
	HK-D6-SBX-08	1/2	21.6	13	
	HK-D6-SBX-12	3/4	27.2	18	M10
	HK-D6-SBX-16	1	34.1	22	M12
	HK-D6-SBX-20	1.1/4	42.8	28	M14
	HK-D6-SBX-24	1.1/2	48.6	32	M16
	HK-D6-SBX-32	2	61	41	M20
	HK-D6-SBX-40	2.1/2	76.6	50	M24
	HK-D6-SBX-48	3	90.5	58	M30

SAE 3000 blanking flange



press. [bar]	code	flange dimension [inch]	cut-out diameter [mm]	bolt size [mm]
348	HK-E3-08	1/2	13	4 x M8
	HK-E3-12	3/4	16	4 x M10
	HK-E3-16	1	25	
278	HK-E3-20	1.1/4	25	4 x M12
210	HK-E3-24	1.1/2	34	
	HK-E3-32	2	43	
175	HK-E3-40	2.1/2	61	
138	HK-E3-48	3	60	4 x M16
35	HK-E3-56	3.1/2	73	
	HK-E3-64	4	87	
	HK-E3-80	5	127	

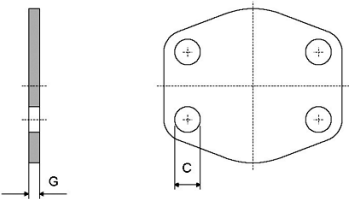
SAE 6000 blanking flange

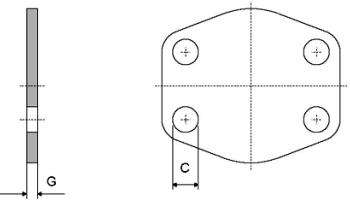


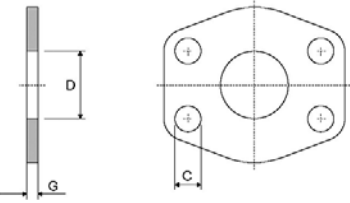
press. [bar]	code	flange dimension [inch]	cut-out diameter [mm]	bolt size [mm]
420	HK-E6-06	3/8	13	4 x M8
	HK-E6-12	3/4	20	4 x M10
	HK-E6-16	1	25	4 x M12
	HK-E6-20	1.1/4	25	4 x M14
	HK-E6-24	1.1/2	34	4 x M16
	HK-E6-32	2	46	4 x M20
	HK-E6-40	2.1/2	56	4 x M24
	HK-E6-48	3	71	4 x M30

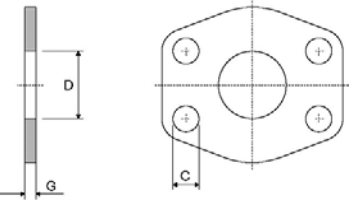
# HIGH PRESSURE - adapters

## SAE flange connectors

SAE 3000 cover plate			
			
code	flange dimension [inch]	thickness G [mm]	bolt hole diam. C [mm]
HK-G3-08	1/2	3	9
HK-G3-12	3/4		11
HK-G3-16	1		
HK-G3-20	1.1/4		11.5
HK-G3-24	1.1/2		
HK-G3-32	2		13.5
HK-G3-40	2.1/2		
HK-G3-48	3	4	17
HK-G3-56	3.1/2		
HK-G3-64	4		
HK-G3-80	5		

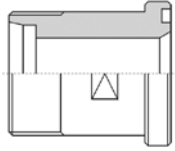
SAE 6000 cover plate			
			
code	flange dimension [inch]	thickness G [mm]	bolt hole diam. C [mm]
HK-G6-08	1/2	4	9
HK-G6-12	3/4		11
HK-G6-16	1		13
HK-G6-20	1.1/4		15
HK-G6-24	1.1/2		17
HK-G6-32	2		21
HK-G6-40	2.1/2		25
HK-G6-48	3		32

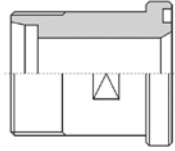
SAE 3000 flange connector plate				
				
code	flange dimension [inch]	opening diam. D [mm]	thickness G [mm]	bolt hole diam. C [mm]
HK-H3-08	1/2	13	3	9
HK-H3-12	3/4	19		11
HK-H3-16	1	25		
HK-H3-20	1.1/4	32		11.5
HK-H3-24	1.1/2	38		
HK-H3-32	2	51		13.5
HK-H3-40	2.1/2	63		
HK-H3-48	3	73	4	17
HK-H3-56	3.1/2	89		
HK-H3-64	4	99		
HK-H3-80	5	120		

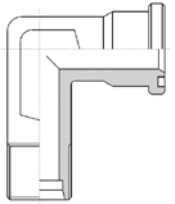
SAE 6000 flange connector plate				
				
code	flange dimension [inch]	opening diam. D [mm]	thickness G [mm]	bolt hole diam. C [mm]
HK-H6-08	1/2	13	4	9
HK-H6-12	3/4	17		11
HK-H6-16	1	24		13
HK-H6-20	1.1/4	31		15
HK-H6-24	1.1/2	38		17
HK-H6-32	2	51		21
HK-H6-40	2.1/2	63		25
HK-H6-48	3	73		32

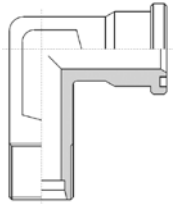
# HIGH PRESSURE - adapters

## SAE flange connectors

Adapter SAE 3000 / DIN 2353				
				
press. [bar]	code	flange dimension [inch]	pipe I.D. [mm]	thread size [mm]
210	HK-ZSK111-08-12S	1/2	12	20x1.5
	HK-ZSK111-08-15L		15	22x1.5
	HK-ZSK111-08-16S		16	24x1.5
	HK-ZSK111-08-18L		18	26x1.5
	HK-ZSK111-12-16S	3/4	16	24x1.5
	HK-ZSK111-12-20S		20	30x2
	HK-ZSK111-12-22L		22	30x2
	HK-ZSK111-16-20S		20	30x2
	HK-ZSK111-16-25S	1	25	36x2
	HK-ZSK111-16-28L		28	36x2
	HK-ZSK111-20-25S		25	36x2
	HK-ZSK111-20-30S		30	42x2
	HK-ZSK111-20-35L	1.1/4	35	45x2
	HK-ZSK111-24-35L		35	45x2
	HK-ZSK111-24-38S		38	52x2
	HK-ZSK111-24-42L		42	52x2
	HK-ZSK111-32-35L	2	35	45x2

Adapter SAE 6000 / DIN 2353				
				
press. [bar]	code	flange dimension [inch]	pipe I.D. [mm]	thread size [mm]
420	HK-ZSK112-08-12S	1/2	12	20x1.5
	HK-ZSK112-08-14S		14	22x1.5
	HK-ZSK112-08-16S		16	24x1.5
	HK-ZSK112-12-16S	3/4	16	24x1.5
	HK-ZSK112-12-20S		20	30x2
	HK-ZSK112-12-22L		22	30x2
	HK-ZSK112-16-20S		20	30x2
	HK-ZSK112-16-25S	1	25	36x2
	HK-ZSK112-16-28L		28	36x2
	HK-ZSK112-20-25S		25	36x2
	HK-ZSK112-20-30S		30	42x2
	HK-ZSK112-20-35L	1.1/4	35	45x2
	HK-ZSK112-24-30S		30	45x2
	HK-ZSK112-24-38S		38	52x2
	HK-ZSK112-24-42L		42	52x2

Adapter 90° SAE 3000 / DIN 2353				
				
press. [bar]	code	flange dimension [inch]	pipe I.D. [mm]	thread size [mm]
210	HK-ZSK211-08-12S	1/2	12	20x1.5
	HK-ZSK211-08-15L		15	22x1.5
	HK-ZSK211-08-16S		16	24x1.5
	HK-ZSK211-08-18L		18	26x1.5
	HK-ZSK211-12-16S	3/4	16	24x1.5
	HK-ZSK211-12-20S		20	30x2
	HK-ZSK211-12-22L		22	30x2
	HK-ZSK211-16-20S		20	30x2
	HK-ZSK211-16-25S	1	25	36x2
	HK-ZSK211-16-28L		28	36x2
	HK-ZSK211-20-25S		25	36x2
	HK-ZSK211-20-30S		30	42x2
	HK-ZSK211-20-35L	1.1/4	35	45x2
	HK-ZSK211-24-35L		35	45x2
	HK-ZSK211-24-38S		38	52x2
	HK-ZSK211-24-42L		42	52x2

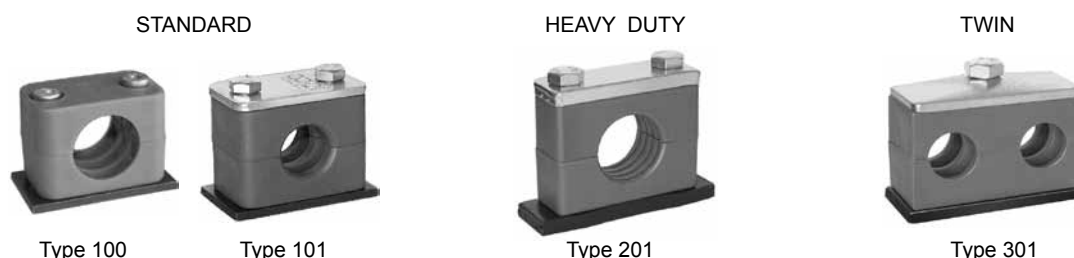
Adapter 90° SAE 6000 / DIN 2353				
				
press. [bar]	code	flange dimension [inch]	pipe I.D. [mm]	thread size [mm]
420	HK-ZSK212-08-12S	1/2	12	20x1.5
	HK-ZSK212-08-14S		14	22x1.5
	HK-ZSK212-08-16S		16	24x1.5
	HK-ZSK212-12-16S	3/4	16	24x1.5
	HK-ZSK212-12-20S		20	30x2
	HK-ZSK212-12-22L		22	30x2
	HK-ZSK212-16-20S		20	30x2
	HK-ZSK212-16-25S	1	25	36x2
	HK-ZSK212-16-28L		28	36x2
	HK-ZSK212-20-25S		25	36x2
	HK-ZSK212-20-30S		30	42x2
	HK-ZSK212-20-35L	1.1/4	35	45x2
	HK-ZSK212-24-30S		30	42x2
	HK-ZSK212-24-38S		38	52x2
	HK-ZSK212-24-42L		42	52x2

# HIGH PRESSURE - DIN 3015 clamps

## DIN 3015 clamps

Designed for quick, easy, durable and esthetic installation of pipes, cables and hoses in various industries, including onshore and marine installations. Manufactured in compliance with DIN 3015 standard. Mounted on a base construction by welding the lower plate, screwing or fixing it on rails.

Clamps come in three versions:



### Clamp material (body):

material	marking	colour	work. temp.
polypropylene	PP	green	from -30°C up to +90°C
polyamide PA66 - self-extinguishing (meets the requirements of fire protection standards for railway vehicles): EN 45545-2, UNI CEI 11170, flammability class UL 94 - V0)	PA	black	from -40°C up to +180°C
rubber	RB	black	from -40°C up to +80°C
aluminium	AL	silver	+350°C

For more information, including details on physical, mechanical, thermal and electrical properties of specific materials, please contact Technical or Sales Department of TUBES INTERNATIONAL®.

### Clamp body finish:



Profiled - standard  
E.g. TC-PP101-215  
(code of a complete clamp with plates and bolts)



Smooth  
E.g. TC-PP101-215H  
(code of complete clamp with plates and bolts)

### Clamps mounted on a base construction and other elements of the system

Clamps are mounted on a base construction by welding the lower plate followed by the assembly of the clamp and pipe. Never weld the plate with the clamp body already on it! Keep proper distance between subsequent clamps. If a pipe is bent, assemble clamps as close as possible to the pipe bend. After tightening screws (with an appropriate torque) of clamp on the pipe, the two halves of the clamp should not be in contact.

# HIGH PRESSURE - DIN 3015 clamps

## DIN 3015 clamps

Optional system elements mounted by welding or screwing, e.g.:

- extended, angular and bridge plates,
- double and multiple mounting plates,,
- rails for multiple mounting,
- units for stack mounting (one onto the other).

### Clamp mounting recommendations

size for pipe diameter range Ø [mm]	recommended distance between clamps [m]
6 ÷ 12.7	0.9
15 ÷ 22	1.2
23 ÷ 28	1.5
30 ÷ 38.1	2
40 ÷ 48.3	2.5
50 ÷ 57	3
60 ÷ 70	3.4
76.1 ÷ 88.9	3.7
101.6 ÷ 108	4
114.3 ÷ 133	4.3
139.7 ÷ 165.1	5
168.3 ÷ 324	5.5

series	group	thread	max. tightening torque for clamps with top plate [Nm]		
			polypropylene	polyamide	aluminium
standard	1 ÷ 6	M6	8	10	12
twin	1	M6	5	6	-
	2 ÷ 4	M8	12	12	-
	5		18	18	-
heavy duty	1	M10	12	20	20
	2		12	20	30
	3		15	25	25
	4	M12	30	40	55
	5	M16	45	55	120
	6	M20	80	150	220
	7	M24	110	200	250
	8	M30	180	350	500

Code structure:

# TC-PP100-215X

group of DIN 3015 clamps

material of clamp body

clamp type

group

pipe O.D.

finish:

blank - complete clamp

X - clamp body

H - complete clamp

smooth

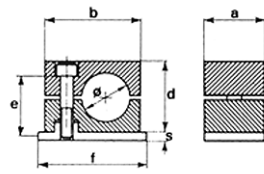
SS - complete clamp  
with AISI 304/316  
metal elements



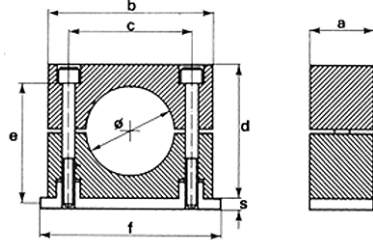
# HIGH PRESSURE - DIN 3015 clamps

## 100 type

### 0 group



### 1÷6 group



## DIN 3015 standard clamp

**Clamp material:** Green polypropylene (also: self-extinguishing polyamide, aluminium, rubber)

**Bolts material:** Galvanized steel

**Base material:** Carbon steel

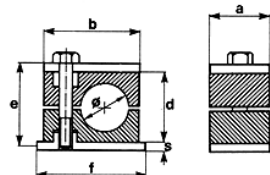
Designed for quick, easy, durable and esthetic assembly of pipes, cables and hoses. Apart from standard metal parts, extended plates, rails and bolts for clamp sets are available as well. For proper selection of elements, contact Sales or Technical Department of TUBES INTERNATIONAL®.

code (polypropylene)	code (polyamide)	code (rubber)	code (aluminium)	group	pipe O.D. [mm]	dimensions						
						a	b	c	d	f	s	e
TC-PP100-006	TC-PA100-006	-	-	0	6	30	28	-	27	32	3	M6 x 20
TC-PP100-008	TC-PA100-008	-	-		8							
TC-PP100-010	TC-PA100-010	-	-		10							
TC-PP100-012	TC-PA100-012	-	-		12							
TC-PP100-106	TC-PA100-106	TC-RB100-106	TC-AL100-106	1	6	30	34	20	27	42	3	M6 x 20
TC-PP100-106.4	TC-PA100-106.4	TC-RB100-106.4	-		6.4							
TC-PP100-108	TC-PA100-108	TC-RB100-108	TC-AL100-108		8							
TC-PP100-109.5	TC-PA100-109.5	TC-RB100-109.5	-		9.5							
TC-PP100-110	TC-PA100-110	TC-RB100-110	TC-AL100-110		10							
TC-PP100-112	TC-PA100-112	TC-RB100-112	TC-AL100-112		12							
TC-PP100-212.7	TC-PA100-212.7	TC-RB100-212.7	-	2	12.7	30	40	26	33	48	3	M6 x 25
TC-PP100-213.5	TC-PA100-213.5	TC-RB100-213.5	-		13.5							
TC-PP100-214	TC-PA100-214	TC-RB100-214	TC-AL100-214		14							
TC-PP100-215	TC-PA100-215	TC-RB100-215	TC-AL100-215		15							
TC-PP100-216	TC-PA100-216	TC-RB100-216	TC-AL100-216		16							
TC-PP100-217.2	TC-PA100-217.2	TC-RB100-217.2	TC-AL100-217.2		17.2							
TC-PP100-218	TC-PA100-218	TC-RB100-218	TC-AL100-218		18							
TC-PP100-219	TC-PA100-219	TC-RB100-219	-		19							
TC-PP100-319	TC-PA100-319	TC-RB100-319	TC-AL100-319	3	19	30	48	33	35	55	3	M6 x 30
TC-PP100-320	TC-PA100-320	TC-RB100-320	TC-AL100-320		20							
TC-PP100-321.3	TC-PA100-321.3	TC-RB100-321.3	TC-AL100-321.3		21.3							
TC-PP100-322	TC-PA100-322	TC-RB100-322	TC-AL100-322		22							
TC-PP100-325	TC-PA100-325	TC-RB100-325	TC-AL100-325		25							
TC-PP100-325.4	TC-PA100-325.4	TC-RB100-325.4	-		25.4							
TC-PP100-426.9	TC-PA100-426.9	TC-RB100-426.9	TC-AL100-426.9	4	26.9	30	57	40	42	62	3	M6 x 35
TC-PP100-428	TC-PA100-428	TC-RB100-428	TC-AL100-428		28							
TC-PP100-430	TC-PA100-430	TC-RB100-430	TC-AL100-430		30							
TC-PP100-432	TC-PA100-432	TC-RB100-432	TC-AL100-432		32							
TC-PP100-532	TC-PA100-532	TC-RB100-532	TC-AL100-532	5	32	30	68	52	58	74	3	M6 x 50
TC-PP100-533.7	TC-PA100-533.7	TC-RB100-533.7	TC-AL100-533.7		33.7							
TC-PP100-535	TC-PA100-535	TC-RB100-535	TC-AL100-535		35							
TC-PP100-538	TC-PA100-538	TC-RB100-538	TC-AL100-538		38							
TC-PP100-540	TC-PA100-540	TC-RB100-540	TC-AL100-540		40							
TC-PP100-542	TC-PA100-542	TC-RB100-542	TC-AL100-542		42							
TC-PP100-542.4	TC-PA100-542.4	TC-RB100-542.4	-		42.4							
TC-PP100-545	TC-PA100-545	TC-RB100-545	TC-AL100-545	6	45	30	86	66	66	88	3	M6 x 60
TC-PP100-644.5	TC-PA100-644.5	TC-RB100-644.5	TC-AL100-644.5		44.5							
TC-PP100-648.3	TC-PA100-648.3	TC-RB100-648.3	TC-AL100-648.3		48.3							
TC-PP100-650.8	TC-PA100-650.8	TC-RB100-650.8	TC-AL100-650.8		50.8							

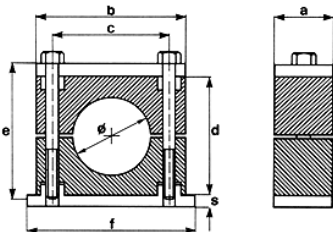
# HIGH PRESSURE - DIN 3015 clamps

## 101 type

### 0 group



### 1÷6 group



## DIN 3015 standard clamp

**Clamp material:** Green polypropylene (also: self-extinguishing polyamide, aluminium, rubber)

**Bolts material:** Galvanized steel

**Plate material:** Galvanized steel

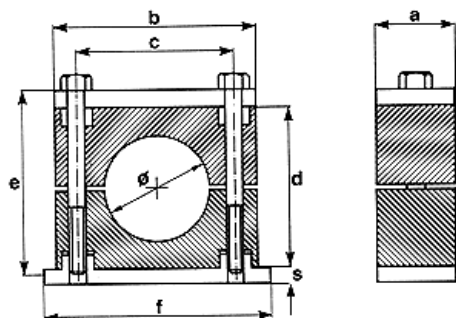
**Base material:** Carbon steel

Designed for quick, easy, durable and esthetic assembly of pipes, cables and hoses. Apart from standard metal parts, extended plates, rails and bolts for clamp sets are available as well. For proper selection of elements, contact Sales or Technical Department of TUBES INTERNATIONAL®.

code (polypropylene)	code (polyamide)	code (rubber)	code (aluminium)	group	pipe O.D. [mm]	dimensions						
						a	b	c	d	f	s	e
TC-PP101-006	TC-PA101-006	-	-	0	6	30	28	-	27	32	3	M6 x 30
TC-PP101-008	TC-PA101-008	-	-		8							
TC-PP101-010	TC-PA101-010	-	-		10							
TC-PP101-012	TC-PA101-012	-	-		12							
TC-PP101-106	TC-PA101-106	TC-RB101-106	TC-AL101-106	1	6	30	34	20	27	42	3	M6 x 30
TC-PP101-106.4	TC-PA101-106.4	TC-RB101-106.4	-		6.4							
TC-PP101-108	TC-PA101-108	TC-RB101-108	TC-AL101-108		8							
TC-PP101-109.5	TC-PA101-109.5	TC-RB101-109.5	-		9.5							
TC-PP101-110	TC-PA101-110	TC-RB101-110	TC-AL101-110		10							
TC-PP101-112	TC-PA101-112	TC-RB101-112	TC-AL101-112		12							
TC-PP101-212.7	TC-PA101-212.7	TC-RB101-212.7	-	2	12.7	30	40	26	33	48	3	M6 x 35
TC-PP101-213.5	TC-PA101-213.5	TC-RB101-213.5	-		13.5							
TC-PP101-214	TC-PA101-214	TC-RB101-214	TC-AL101-214		14							
TC-PP101-215	TC-PA101-215	TC-RB101-215	TC-AL101-215		15							
TC-PP101-216	TC-PA101-216	TC-RB101-216	TC-AL101-216		16							
TC-PP101-217.2	TC-PA101-217.2	TC-RB101-217.2	TC-AL101-217.2		17.2							
TC-PP101-218	TC-PA101-218	TC-RB101-218	TC-AL101-218		18							
TC-PP101-219	TC-PA101-219	TC-RB101-219	-		19							
TC-PP101-319	TC-PA101-319	TC-RB101-319	TC-AL101-319	3	19	30	48	33	35	55	3	M6 x 40
TC-PP101-320	TC-PA101-320	TC-RB101-320	TC-AL101-320		20							
TC-PP101-321.3	TC-PA101-321.3	TC-RB101-321.3	TC-AL101-321.3		21.3							
TC-PP101-322	TC-PA101-322	TC-RB101-322	TC-AL101-322		22							
TC-PP101-325	TC-PA101-325	TC-RB101-325	TC-AL101-325		25							
TC-PP101-325.4	TC-PA101-325.4	TC-RB101-325.4	-		25.4							
TC-PP101-426.9	TC-PA101-426.9	TC-RB101-426.9	TC-AL101-426.9	4	26.9	30	57	40	42	62	3	M6 x 45
TC-PP101-428	TC-PA101-428	TC-RB101-428	TC-AL101-428		28							
TC-PP101-430	TC-PA101-430	TC-RB101-430	TC-AL101-430		30							
TC-PP101-432	TC-PA101-432	TC-RB101-432	TC-AL101-432		32							
TC-PP101-532	TC-PA101-532	TC-RB101-532	TC-AL101-532	5	32	30	68	52	58	74	3	M6 x 60
TC-PP101-533.7	TC-PA101-533.7	TC-RB101-533.7	TC-AL101-533.7		33.7							
TC-PP101-535	TC-PA101-535	TC-RB101-535	TC-AL101-535		35							
TC-PP101-538	TC-PA101-538	TC-RB101-538	TC-AL101-538		38							
TC-PP101-540	TC-PA101-540	TC-RB101-540	TC-AL101-540		40							
TC-PP101-542	TC-PA101-542	TC-RB101-542	TC-AL101-542		42							
TC-PP101-542.4	TC-PA101-542.4	TC-RB101-542.4	-		42.4							
TC-PP101-545	TC-PA101-545	TC-RB101-545	TC-AL101-545		45							
TC-PP101-644.5	TC-PA101-644.5	TC-RB101-644.5	TC-AL101-644.5	6	44.5	30	86	66	66	88	3	M6 x 70
TC-PP101-648.3	TC-PA101-648.3	TC-RB101-648.3	TC-AL101-648.3		48.3							
TC-PP101-650.8	TC-PA101-650.8	TC-RB101-650.8	TC-AL101-650.8		50.8							

# HIGH PRESSURE - DIN 3015 clamps

## 201 type



## DIN 3015 heavy duty clamp

**Clamp material:** Green polypropylene (also: self-extinguishing polyamide, aluminium, rubber)

**Bolts material:** Galvanized steel

**Plate material:** Galvanized steel

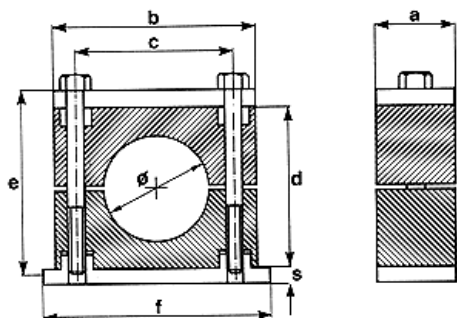
**Base material:** Carbon steel

Designed for quick, easy, durable and esthetic assembly of pipes, cables and hoses. Apart from standard metal parts, extended plates, rails and bolts for clamp sets are available as well. For proper selection of elements, contact Sales or Technical Department of TUBES INTERNATIONAL®.

code (polypropylene)	code (polyamide)	code (rubber)	code (aluminium)	group	pipe O.D. [mm]	dimensions						
						a	b	c	d	f	s	e
TC-PP201-106	TC-PA201-106	TC-RB201-106	TC-AL201-106	1	6	30	55	33	32	73	8	M10 x 45
TC-PP201-106.4	TC-PA201-106.4	TC-RB201-106.4	TC-AL201-106.4		6.4							
TC-PP201-108	TC-PA201-108	TC-RB201-108	TC-AL201-108		8							
TC-PP201-109.5	TC-PA201-109.5	TC-RB201-109.5	-		9.5							
TC-PP201-110	TC-PA201-110	TC-RB201-110	TC-AL201-110		10							
TC-PP201-112	TC-PA201-112	TC-RB201-112	TC-AL201-112		12							
TC-PP201-112.7	TC-PA201-112.7	TC-RB201-112.7	TC-AL201-112.7		12.7							
TC-PP201-113.5	TC-PA201-113.5	TC-RB201-113.5	-		13.5							
TC-PP201-114	TC-PA201-114	TC-RB201-114	TC-AL201-114		14							
TC-PP201-115	TC-PA201-115	TC-RB201-115	TC-AL201-115		15							
TC-PP201-116	TC-PA201-116	TC-RB201-116	TC-AL201-116		16							
TC-PP201-117.2	TC-PA201-117.2	TC-RB201-117.2	TC-AL201-117.2		17.2							
TC-PP201-118	TC-PA201-118	TC-RB201-118	TC-AL201-118		18							
TC-PP201-219	TC-PA201-219	TC-RB201-219	TC-AL201-219	2	19	30	70	45	48	85	8	M10 x 60
TC-PP201-220	TC-PA201-220	TC-RB201-220	TC-AL201-220		20							
TC-PP201-221.3	TC-PA201-221.3	TC-RB201-221.3	TC-AL201-221.3		21.3							
TC-PP201-222	TC-PA201-222	TC-RB201-222	TC-AL201-222		22							
TC-PP201-225	TC-PA201-225	TC-RB201-225	TC-AL201-225		25							
TC-PP201-225.4	TC-PA201-225.4	TC-RB201-225.4	-		25.4							
TC-PP201-226.9	TC-PA201-226.9	TC-RB201-226.9	TC-AL201-226.9		26.9							
TC-PP201-228	TC-PA201-228	TC-RB201-228	TC-AL201-228		28							
TC-PP201-230	TC-PA201-230	TC-RB201-230	TC-AL201-230		30							
TC-PP201-330	TC-PA201-330	TC-RB201-330	TC-AL201-330	3	30	30	85	60	60	100	8	M10 x 70
TC-PP201-332	TC-PA201-332	TC-RB201-332	TC-AL201-332		32							
TC-PP201-333.7	TC-PA201-333.7	TC-RB201-333.7	TC-AL201-333.7		33.7							
TC-PP201-335	TC-PA201-335	TC-RB201-335	TC-AL201-335		35							
TC-PP201-338	TC-PA201-338	TC-RB201-338	TC-AL201-338		38							
TC-PP201-340	TC-PA201-340	TC-RB201-340	TC-AL201-340		40							
TC-PP201-342	TC-PA201-342	TC-RB201-342	TC-AL201-342		42							
TC-PP201-342.4	TC-PA201-342.4	TC-RB201-342.4	TC-AL201-342.4		42.4							
TC-PP201-438	TC-PA201-438	TC-RB201-438	TC-AL201-438	4	38	45	120	90	90	140	10	M12 x 100
TC-PP201-442	TC-PA201-442	TC-RB201-442	-		42							
TC-PP201-442.4	TC-PA201-442.4	TC-RB201-442.4	TC-AL201-442.4		42.4							
TC-PP201-444.5	TC-PA201-444.5	TC-RB201-444.5	TC-AL201-444.5		44.5							
TC-PP201-448.3	TC-PA201-448.3	TC-RB201-448.3	TC-AL201-448.3		48.3							

# HIGH PRESSURE - DIN 3015 clamps

## 201 type



## DIN 3015 heavy duty clamp

**Clamp material:** Green polypropylene (also: self-extinguishing polyamide, aluminium, rubber)

**Bolts material:** Galvanized steel

**Plate material:** Galvanized steel

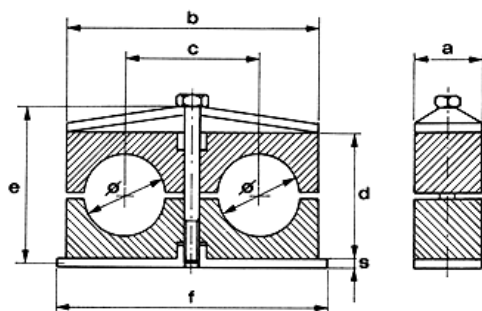
**Base material:** Carbon steel

Designed for quick, easy, durable and esthetic assembly of pipes, cables and hoses. Apart from standard metal parts, extended plates, rails and bolts for clamp sets are available as well. For proper selection of elements, contact Sales or Technical Department of TUBES INTERNATIONAL®.

code (polypropylene)	code (polyamide)	code (rubber)	code (aluminium)	group	pipe O.D. [mm]	dimensions						
						a	b	c	d	f	s	e
TC-PP201-450	TC-PA201-450	TC-RB201-450	TC-AL201-450	4	50	45	120	90	90	140	10	M12 x 100
TC-PP201-450.8	TC-PA201-450.8	TC-RB201-450.8	-		50.8							
TC-PP201-455	TC-PA201-455	TC-RB201-455	TC-AL201-455		55							
TC-PP201-457	TC-PA201-457	TC-RB201-457	TC-AL201-457		57							
TC-PP201-460.3	TC-PA201-460.3	TC-RB201-460.3	TC-AL201-460.3		60.3							
TC-PP201-463.5	TC-PA201-463.5	TC-RB201-463.5	TC-AL201-463.5		63.5							
TC-PP201-465	TC-PA201-465	TC-RB201-465	TC-AL201-465		65							
TC-PP201-470	TC-PA201-470	TC-RB201-470	TC-AL201-470		70							
TC-PP201-565	TC-PA201-565	TC-RB201-565	TC-AL201-565	5	65	60	152	122	120	180	10	M16 x 130
TC-PP201-570	TC-PA201-570	TC-RB201-570	TC-AL201-570		70							
TC-PP201-575	TC-PA201-575	TC-RB201-575	TC-AL201-575		75							
TC-PP201-576.1	TC-PA201-576.1	TC-RB201-576.1	TC-AL201-576.1		76.1							
TC-PP201-580	TC-PA201-580	TC-RB201-580	TC-AL201-580		80							
TC-PP201-582.5	TC-PA201-582.5	TC-RB201-582.5	TC-AL201-582.5		80							
TC-PP201-588.9	TC-PA201-588.9	TC-RB201-588.9	TC-AL201-588.9	6	88.9	80	205	168	170	225	15	M20 x 190
TC-PP201-688.9	TC-PA201-688.9	TC-RB201-688.9	-		88.9							
TC-PP201-6100	TC-PA201-6100	TC-RB201-6100	-		100							
TC-PP201-6101.6	TC-PA201-6101.6	TC-RB201-6101.6	-		101.6							
TC-PP201-6108	TC-PA201-6108	TC-RB201-6108	-		108							
TC-PP201-6114.3	TC-PA201-6114.3	TC-RB201-6114.3	-		114.3							
TC-PP201-6127	TC-PA201-6127	TC-RB201-6127	-		127							
TC-PP201-6133	TC-PA201-6133	TC-RB201-6133	-		133							
TC-PP201-7133	TC-PA201-7133	TC-RB201-7133	-	7	133	90	250	205	200	270	15	M24 x 220
TC-PP201-7139.7	TC-PA201-7139.7	TC-RB201-7139.7	-		139.7							
TC-PP201-7152.4	TC-PA201-7152.4	TC-RB201-7152.4	-		152.4							
TC-PP201-7165	TC-PA201-7165	TC-RB201-7165	-		165							
TC-PP201-7168.3	TC-PA201-7168.3	TC-RB201-7168.3	-		168.3							
TC-PP201-8168.3	-	-	-	8	168.3	120	320	265	270	340	25	M30 x 300
TC-PP201-8177.8	-	-	-		177.8							
TC-PP201-8193.7	-	-	-		193.7							
TC-PP201-8216	-	-	-		216							
TC-PP201-8219.1	-	-	-		219.1							

# HIGH PRESSURE - DIN 3015 clamps

## 301 type



## DIN 3015 double clamp

**Clamp material:** Green polypropylene (also: self-extinguishing polyamide, rubber)

**Bolts material:** Galvanized steel

**Plate material:** Galvanized steel

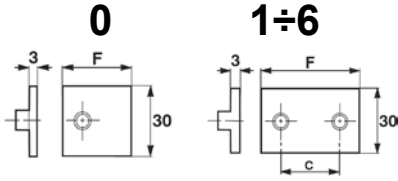
**Base material:** Carbon steel

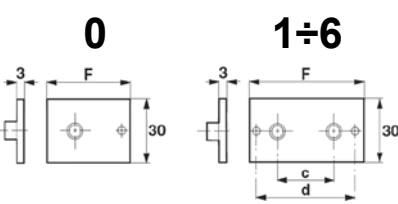
Designed for quick, easy, durable and esthetic assembly of pipes, cables and hoses. Apart from standard metal parts, extended plates, rails and bolts for clamp sets are available as well. For proper selection of elements, contact Sales or Technical Department of TUBES INTERNATIONAL®.

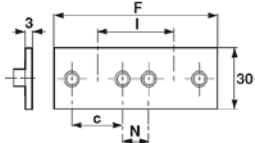
code (polypropylene)	code (polyamide)	code (rubber)	code (aluminium)	group	pipe O.D. [mm]	dimensions						
						a	b	c	d	f	s	e
TC-PP301-106	TC-PA301-106	TC-RB301-106	-	1	6 x 6	30	37	20	25	37	3	M6 x 35
TC-PP301-106.4	TC-PA301-106.4	TC-RB301-106.4	-		6.4 x 6.4							
TC-PP301-108	TC-PA301-108	TC-RB301-108	-		8 x 8							
TC-PP301-109.5	TC-PA301-109.5	TC-RB301-109.5	-		9.5 x 9.5							
TC-PP301-110	TC-PA301-110	TC-RB301-110	-		10 x 10							
TC-PP301-112	TC-PA301-112	TC-RB301-112	-		12 x 12							
TC-PP301-212.7	TC-PA301-212.7	TC-RB301-212.7	-	2	12.7 x 12.7	30	53	29	26	55	5	M8 x 35
TC-PP301-213.5	TC-PA301-213.5	TC-RB301-213.5	-		13.5 x 13.5							
TC-PP301-214	TC-PA301-214	TC-RB301-214	-		14 x 14							
TC-PP301-215	TC-PA301-215	TC-RB301-215	-		15 x 15							
TC-PP301-216	TC-PA301-216	TC-RB301-216	-		16 x 16							
TC-PP301-217.2	TC-PA301-217.2	TC-RB301-217.2	-		17.2 x 17.2							
TC-PP301-218	TC-PA301-218	TC-RB301-218	-	3	18 x 18	30	67	36	37	70	5	M8 x 45
TC-PP301-319	TC-PA301-319	TC-RB301-319	-		19 x 19							
TC-PP301-320	TC-PA301-320	TC-RB301-320	-		20 x 20							
TC-PP301-321.3	TC-PA301-321.3	TC-RB301-321.3	-		21.3 x 21.3							
TC-PP301-322	TC-PA301-322	TC-RB301-322	-		22 x 22							
TC-PP301-325	TC-PA301-325	TC-RB301-325	-		25 x 25							
TC-PP301-325.4	TC-PA301-325.4	TC-RB301-325.4	-	4	25.4x 25.4	30	82	45	42	85	5	M8 x 50
TC-PP301-426.9	TC-PA301-426.9	TC-RB301-426.9	-		26.9 x 26.9							
TC-PP301-428	TC-PA301-428	TC-RB301-428	-		28 x 28							
TC-PP301-430	TC-PA301-430	TC-RB301-430	-	5	30 x 30	30	106	56	54	110	5	M8 x 60
TC-PP301-532	TC-PA301-532	TC-RB301-532	-		32 x 32							
TC-PP301-533.7	TC-PA301-533.7	TC-RB301-533.7	-		33.7 x 33.7							
TC-PP301-535	TC-PA301-535	TC-RB301-535	-		35 x 35							
TC-PP301-538	TC-PA301-538	TC-RB301-538	-		38 x 38							
TC-PP301-540	TC-PA301-540	TC-RB301-540	-		40 x 40							
TC-PP301-542	TC-PA301-542	TC-RB301-542	-		42 x 42							
TC-PP301-542.4	TC-PA301-542.4	TC-RB301-542.4	-		42.4 x 42.4							

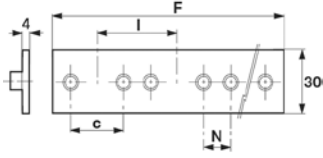
# HIGH PRESSURE - DIN 3015 clamps

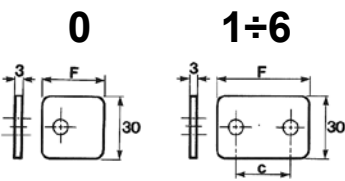
## DIN 3015 clamps - mounting elements

	code (galv. steel)	code (AISI 316L)	group	c [mm]	F [mm]
	TC-APIN-0	TC-APIN-0-SS	0	-	32
	TC-APIN-1	TC-APIN-1-SS	1	20	42
	TC-APIN-2	TC-APIN-2-SS	2	26	48
	TC-APIN-3	TC-APIN-3-SS	3	33	55
	TC-APIN-4	TC-APIN-4-SS	4	40	62
	TC-APIN-5	TC-APIN-5-SS	5	52	74
	TC-APIN-6	TC-APIN-6-SS	6	66	88

	code (galv. steel)	code (AISI 316L)	group	F [mm]	c [mm]	d [mm]
	TC-APIA-0	TC-APIA-0-SS	0	46	-	-
	TC-APIA-1	TC-APIA-1-SS	1	64	20	51
	TC-APIA-2	TC-APIA-2-SS	2	70	26	56
	TC-APIA-3	TC-APIA-3-SS	3	78	33	64
	TC-APIA-4	TC-APIA-4-SS	4	86	40	71
	TC-APIA-5	TC-APIA-5-SS	5	97	52	83
	TC-APIA-6	TC-APIA-6-SS	6	112	66	100

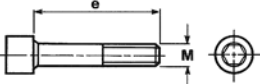
	code (galv. steel)	code (AISI 316L)	group	F [mm]	c [mm]	N [mm]	l [mm]	no. of clamps
	TC-APID-0	TC-APID-0-SS	0	61	-	-	30	2
	TC-APID-1	TC-APID-1-SS	1	81	20	20	40	2
	TC-APID-2	TC-APID-2-SS	2	91	26	18	44	2
	TC-APID-3	TC-APID-3-SS	3	106	33	19	52	2
	TC-APID-4	TC-APID-4-SS	4	121	40	20	60	2
	TC-APID-5	TC-APID-5-SS	5	148	52	23	75	2
	TC-APID-6	TC-APID-6-SS	6	177	66	24	90	2

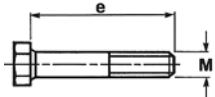
	code (galv. steel)	code (AISI 316L)	group	F [mm]	c [mm]	N [mm]	l [mm]	no. of clamps
	TC-APIM-0	TC-APIM-0-SS	0	306	-	-	30	10
	TC-APIM-1	TC-APIM-1-SS	1	404	20	20	40	10
	TC-APIM-2	TC-APIM-2-SS	2	447	26	18	44	10
	TC-APIM-3	TC-APIM-3-SS	3	525	33	19	52	10
	TC-APIM-4	TC-APIM-4-SS	4	303	40	20	60	5
	TC-APIM-5	TC-APIM-5-SS	5	375	52	23	75	5
	TC-APIM-6	TC-APIM-6-SS	6	447	66	24	90	5

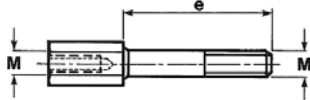
	code (galv. steel)	code (AISI 316L)	group	c [mm]	F [mm]
	TC-APS-0	TC-APS-0-SS	0	-	28
	TC-APS-1	TC-APS-1-SS	1	20	37
	TC-APS-2	TC-APS-2-SS	2	26	43
	TC-APS-3	TC-APS-3-SS	3	33	50
	TC-APS-4	TC-APS-4-SS	4	40	57
	TC-APS-5	TC-APS-5-SS	5	52	69
	TC-APS-6	TC-APS-6-SS	6	66	83

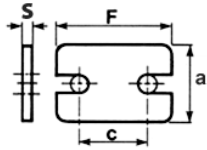
# HIGH PRESSURE - DIN 3015 clamps

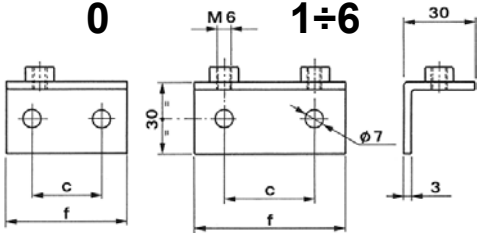
## DIN 3015 clamps - mounting elements

 <p>Standard clamp - allen screw for complete clamps 100 type</p>	code (galv. steel)	code (AISI 304)	group	M [mm]	e [mm]
	TC-AVTC-0	TC-AVTC-0-SS	0	M6	20
	TC-AVTC-1	TC-AVTC-1-SS	1	M6	20
	TC-AVTC-2	TC-AVTC-2-SS	2	M6	25
	TC-AVTC-3	TC-AVTC-3-SS	3	M6	30
	TC-AVTC-4	TC-AVTC-4-SS	4	M6	35
	TC-AVTC-5	TC-AVTC-5-SS	5	M6	50
	TC-AVTC-6	TC-AVTC-6-SS	6	M6	60

 <p>Standard clamp - screw (hexagonal) for complete clamps 101 type</p>	code (galv. steel)	code (AISI 304)	group	M [mm]	e [mm]
	TC-AVTE-0	TC-AVTE-0-SS	0	M6	30
	TC-AVTE-1	TC-AVTE-1-SS	1	M6	30
	TC-AVTE-2	TC-AVTE-2-SS	2	M6	35
	TC-AVTE-3	TC-AVTE-3-SS	3	M6	40
	TC-AVTE-4	TC-AVTE-4-SS	4	M6	45
	TC-AVTE-5	TC-AVTE-5-SS	5	M6	60
	TC-AVTE-6	TC-AVTE-6-SS	6	M6	70

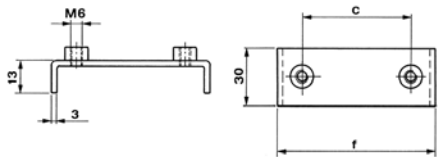
 <p>Standard clamp - stacking screw</p>	code (galv. steel)	code (AISI 304)	group	M [mm]	e [mm]
	TC-AVTEA-0	TC-AVTEA-0-SS	0	M6	20
	TC-AVTEA-1	TC-AVTEA-1-SS	1	M6	20
	TC-AVTEA-2	TC-AVTEA-2-SS	2	M6	25
	TC-AVTEA-3	TC-AVTEA-3-SS	3	M6	30
	TC-AVTEA-4	TC-AVTEA-4-SS	4	M6	35
	TC-AVTEA-5	TC-AVTEA-5-SS	5	M6	50
	TC-AVTEA-6	TC-AVTEA-6-SS	6	M6	60

 <p>Standard clamp - stacking security plate</p>	code (galv. steel)	code (AISI 316L)	group	F [mm]	c [mm]
	TC-APMRS-0	TC-APMRS-0-SS	0	28	-
	TC-APMRS-1	TC-APMRS-1-SS	1	34	20
	TC-APMRS-2	TC-APMRS-2-SS	2	41	26
	TC-APMRS-3	TC-APMRS-3-SS	3	47	33
	TC-APMRS-4	TC-APMRS-4-SS	4	57	40
	TC-APMRS-5	TC-APMRS-5-SS	5	67	52
	TC-APMRS-6	TC-APMRS-6-SS	6	82	66

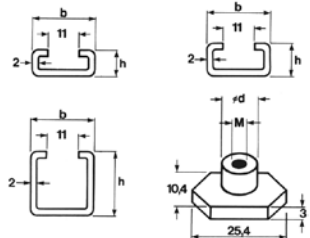
 <p>Standard clamp - angular lower plate</p>	code (galv. steel)	code (AISI 316L)	group	c [mm]	f [mm]
	TC-APINL-0	TC-APINL-0-SS	0	14	32
	TC-APINL-1	TC-APINL-1-SS	1	20	42
	TC-APINL-2	TC-APINL-2-SS	2	26	48
	TC-APINL-3	TC-APINL-3-SS	3	33	55
	TC-APINL-4	TC-APINL-4-SS	4	40	62
	TC-APINL-5	TC-APINL-5-SS	5	52	74
	TC-APINL-6	TC-APINL-6-SS	6	66	88

# HIGH PRESSURE - DIN 3015 clamps

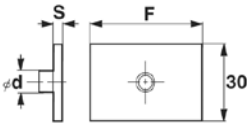
## DIN 3015 clamps - mounting elements

	code (galv. steel)	code (AISI 316L)	group	c [mm]	f [mm]
	TC-APINB-1	TC-APINB-1-SS	1	20	48
	TC-APINB-2	TC-APINB-2-SS	2	26	54
	TC-APINB-3	TC-APINB-3-SS	3	33	62
	TC-APINB-4	TC-APINB-4-SS	4	40	71
	TC-APINB-5	TC-APINB-5-SS	5	52	85
	TC-APINB-6	TC-APINB-6-SS	6	66	98

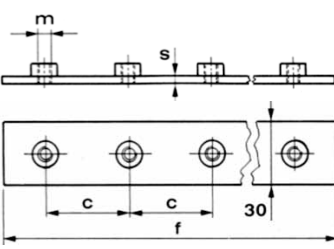
Standard clamp - bridge lower plate

	code (galv. steel)	code (AISI 304)	standard group	double group	b [mm]	h [mm]	length [m]
	TC-ABINS-1	TC-ABINS-1-SS	0÷6	1÷5	28	11	1 or 2
	TC-ABINS-2	TC-ABINS-2-SS			28	14	1 or 2
	TC-ABINS-3	TC-ABINS-3-SS			28	30	1 or 2
	TC-ADES	TC-ADES-SS		1	nut for guide rails (M6, d = 12)		
	TC-ADESD	TC-ADESD-SS		2÷5	nut for guide rails (M8, d = 14)		

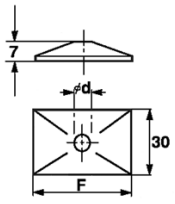
Double and standard clamp - rails and nuts

	code (galv. steel)	code (AISI 304)	group	S [mm]	d [mm]	F [mm]
	TC-ADPIN-1	TC-ADPIN-1-SS	1	3	12	37
	TC-ADPIN-2	TC-ADPIN-2-SS	2	5	14	55
	TC-ADPIN-3	TC-ADPIN-3-SS	3	5	14	70
	TC-ADPIN-4	TC-ADPIN-4-SS	4	5	14	85
	TC-ADPIN-5	TC-ADPIN-5-SS	5	5	14	110

Double clamp - short lower plate for double complete clamps 301 type

	code (galv. steel)	code (AISI 316L)	group	f [mm]	c [mm]	s [mm]	m [mm]	no. of clamps
	TC-ADPIM-1	TC-ADPIM-1-SS	1	200	40	3	M6	5
	TC-ADPIM-2	TC-ADPIM-2-SS	2	290	58	5	M8	5
	TC-ADPIM-3	TC-ADPIM-3-SS	3	360	72	5	M8	5
	TC-ADPIM-4	TC-ADPIM-4-SS	4	450	90	5	M8	5
	TC-ADPIM-5	TC-ADPIM-5-SS	5	560	112	5	M8	5

Double clamp - multiple lower plate

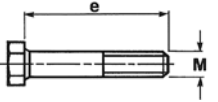
	code (galv. steel)	code (AISI 316L)	group	F [mm]	d [mm]
	TC-ADPS-1	TC-ADPS-1-SS	1	35	7
	TC-ADPS-2	TC-ADPS-2-SS	2	52	9
	TC-ADPS-3	TC-ADPS-3-SS	3	66	9
	TC-ADPS-4	TC-ADPS-4-SS	4	81	9
	TC-ADPS-5	TC-ADPS-5-SS	5	105	9

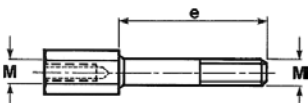
Double clamp - upper plate for double complete clamps 301 type

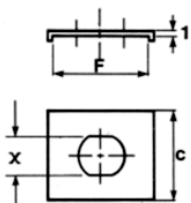


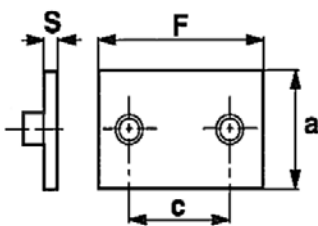
# HIGH PRESSURE - DIN 3015 clamps

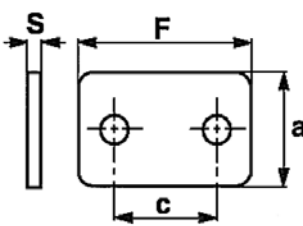
## DIN 3015 clamps - mounting elements

 <p>Double clamp - screw (hexagonal) for double complete clamps 301 type</p>	code (galv. steel)	code (AISI 304)	group	M [mm]	e [mm]
	TC-ADVTE-1	TC-ADVTE-1-SS	1	M6	35
	TC-ADVTE-2	TC-ADVTE-2-SS	2	M8	35
	TC-ADVTE-3	TC-ADVTE-3-SS	3	M8	45
	TC-ADVTE-4	TC-ADVTE-4-SS	4	M8	50
	TC-ADVTE-5	TC-ADVTE-5-SS	5	M8	60

 <p>Double clamp - stacking screw</p>	code (galv. steel)	code (AISI 304)	group	M [mm]	e [mm]
	TC-ADVTEA-1	TC-ADVTEA-1-SS	1	M6	20
	TC-ADVTEA-2	TC-ADVTEA-2-SS	2	M8	20
	TC-ADVTEA-3	TC-ADVTEA-3-SS	3	M8	29
	TC-ADVTEA-4	TC-ADVTEA-4-SS	4	M8	34
	TC-ADVTEA-5	TC-ADVTEA-5-SS	5	M8	47

 <p>Double clamp - stacking security plate</p>	code (galv. steel)	code (AISI 316L)	group	F [mm]	c [mm]	X [mm]
	TC-APMRSD-1	TC-APMRSD-1-SS	1	30	30	11
	TC-APMRSD-2-5	TC-APMRSD-2-5-SS	2+5	30	30	13

 <p>Heavy clamp - short lower plate for heavy complete clamps 201 type</p>	code (galv. steel)	code (AISI 316L)	group	a [mm]	F [mm]	c [mm]	S [mm]
	TC-APINP-1	TC-APINP-1-SS	1	30	75	33	8
	TC-APINP-2	TC-APINP-2-SS	2	30	87	45	8
	TC-APINP-3	TC-APINP-3-SS	3	30	102	60	8
	TC-APINP-4	TC-APINP-4-SS	4	45	140	80	10
	TC-APINP-5	TC-APINP-5-SS	5	60	180	122	10
	TC-APINP-6	TC-APINP-6-SS	6	80	225	168	15
	TC-APINP-7	TC-APINP-7-SS	7	90	270	205	15
	TC-APINP-8	TC-APINP-8-SS	8	120	340	265	25

 <p>Heavy clamp - upper plate for heavy complete clamps 201 type</p>	code (galv. steel)	code (AISI 316L)	group	a [mm]	F [mm]	c [mm]	S [mm]
	TC-APSP-1	TC-APSP-1-SS	1	30	55	33	8
	TC-APSP-2	TC-APSP-2-SS	2	30	70	45	8
	TC-APSP-3	TC-APSP-3-SS	3	30	85	60	8
	TC-APSP-4	TC-APSP-4-SS	4	45	120	80	10
	TC-APSP-5	TC-APSP-5-SS	5	60	152	122	10
	TC-APSP-6	TC-APSP-6-SS	6	80	205	168	15
	TC-APSP-7	TC-APSP-7-SS	7	90	250	205	15
	TC-APSP-8	TC-APSP-8-SS	8	120	320	265	25

# HIGH PRESSURE - DIN 3015 clamps

## DIN 3015 clamps - mounting elements

<p>Heavy clamp - screw (hexagonal) for heavy complete clamps 201 type</p>	code (galv. steel)	code (AISI 304)	group	M [mm]	e [mm]
	TC-AVTEP-1	TC-AVTEP-1-SS	1	M10	45
	TC-AVTEP-2	TC-AVTEP-2-SS	2	M10	60
	TC-AVTEP-3	TC-AVTEP-3-SS	3	M10	70
	TC-AVTEP-4	TC-AVTEP-4-SS	4	M12	100
	TC-AVTEP-5	TC-AVTEP-5-SS	5	M16	130
	TC-AVTEP-6	TC-AVTEP-6-SS	6	M20	190
	TC-AVTEP-7	TC-AVTEP-7-SS	7	M24	220
	TC-AVTEP-8	TC-AVTEP-8-SS	8	M30	300

<p>Heavy clamp - stacking screw</p>	code (galv. steel)	code (AISI 304)	group	M [mm]	e [mm]
	TC-AVTEAP-1	TC-AVTEAP-1-SS	1	M10	26
	TC-AVTEAP-2	TC-AVTEAP-2-SS	2	M10	41
	TC-AVTEAP-3	TC-AVTEAP-3-SS	3	M10	52
	TC-AVTEAP-4	TC-AVTEAP-4-SS	4	M12	83
	TC-AVTEAP-5	TC-AVTEAP-5-SS	5	M16	110

<p>Heavy clamp - stacking security plate</p>	code (galv. steel)	code (AISI 316L)	group	a [mm]	F [mm]	c [mm]	S [mm]
	TC-APMRSP-1	TC-APMRSP-1-SS	1	30	55	33	8
	TC-APMRSP-2	TC-APMRSP-2-SS	2	30	70	45	8
	TC-APMRSP-3	TC-APMRSP-3-SS	3	30	85	60	8
	TC-APMRSP-4	TC-APMRSP-4-SS	4	45	120	90	10
	TC-APMRSP-5	TC-APMRSP-5-SS	5	60	152	122	10

<p>Heavy clamp - rails and nuts</p>	code (galv. steel)	code (AISI 316L)	group	b [mm]	h [mm]	length [m]
	TC-ABINP-1	TC-ABINP-1-SS	1÷4	40	22	1 or 2
	TC-ADESP-1	TC-ADESP-1-SS	1÷3	nut for guide rails (M10, d = 18)		
	TC-ADESP-2	TC-ADESP-2-SS	4	nut for guide rails (M12, d = 20)		

<p>Heavy clamp - upper and lower double plate</p>	code (galv. steel)	code (AISI 316L)	group	a [mm]	f [mm]	s [mm]	c [mm]	p [mm]	d/m [mm]
	TC-APSPD-1	TC-APSPD-1-SS	1	60	56	8	33	31	11
	TC-APSPD-2	TC-APSPD-2-SS	2	60	70	8	45	31	11
	TC-APSPD-3	TC-APSPD-3-SS	3	60	85	8	60	31	11
	TC-APSPD-4	TC-APSPD-4-SS	4	90	116	10	90	46	14
	TC-APSPD-5	TC-APSPD-5-SS	5	120	153	10	122	61	18
	TC-APINPD-1	TC-APINPD-1-SS	1	60	74	8	33	31	M10
	TC-APINPD-2	TC-APINPD-2-SS	2	60	86	8	45	31	M10
	TC-APINPD-3	TC-APINPD-3-SS	3	60	100	8	60	31	M10
	TC-APINPD-4	TC-APINPD-4-SS	4	90	140	10	90	46	M12
	TC-APINPD-5	TC-APINPD-5-SS	5	120	180	10	122	61	M16

## HIGH PRESSURE - precision pipes

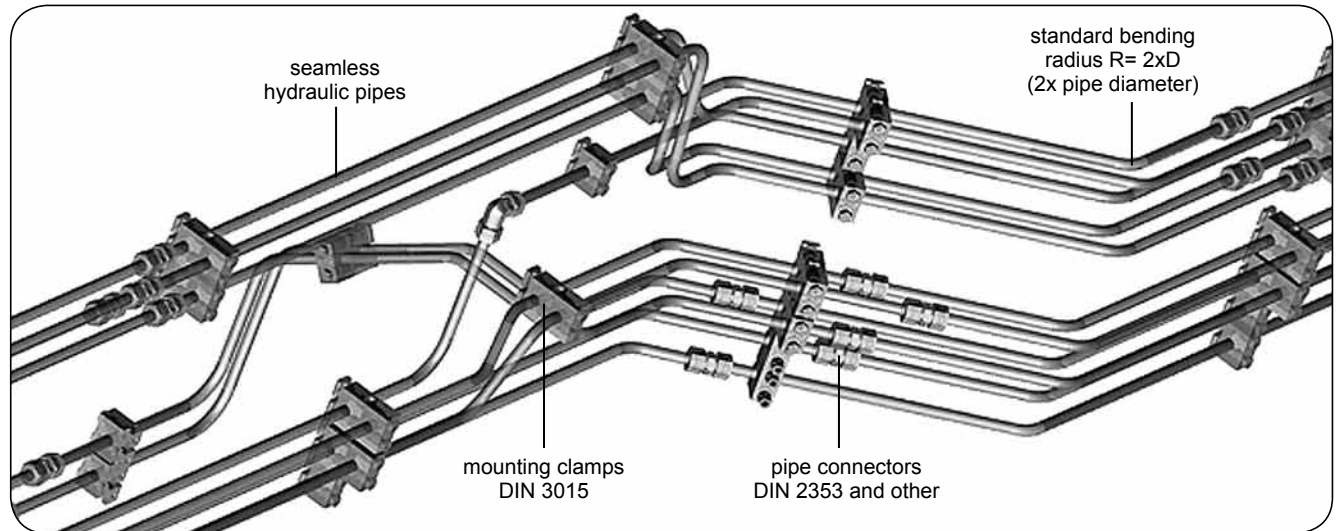
### Hydraulic pipe assemblies

Pipe assemblies intended for application in high pressure hydraulics. Produced according to customer's specification as straight or bent assemblies also complete with connectors and mounting elements.

The pipe assemblies are available in 6 m lengths and maximum outer diameter of up to 42 mm.

Production is performed by precise copying the existing pipes, on the basis of drawings or directly on 3D model. XYZ format data used in 3D pipe bending process ensures reliable and fully repeatable bends.

The pipe assemblies can be made of carbon steel or zinc-plated steel but also of acid-resistant steel pipes.



### Professional 3D pipe bending

The production of bent pipe assemblies based on a pipe assembly supplied as a pattern by a customer is preceded by precise coordinate measurement using Romer® arm - a portable coordinate measuring machine. The measurement allows for generating 3D model of the pipe and saving it in the computer memory. The data gathered can be further used by a bending machine but can also be used to develop technical documentation of the entire pipe system.



Complete pipe assemblies can be supplied with various types of connectors typical for high pressure hydraulics:

- DIN 2353,
- JIC,
- ORFS,
- SAE,

and with mounting elements, pipe mounting clamps:

- DIN 3015.

Non-standard connectors can also be supplied but only if approved by Technical Department of TUBES INTERNATIONAL®.

To protect the entire hydraulic system and extend its service life, every pipe assembly from TUBES INTERNATIONAL® is cleaned and secured against dirt using Ultra Clean® system.

TUBES INTERNATIONAL® provides comprehensive advice on the selection of appropriate pipeline components and correct mounting procedures.

## HIGH PRESSURE - precision pipes



### HPZ, HPC type

Seamless pipes made of cold drawn hardened steel.

**Material:** E235+N according to EN 10305-4  
St. 37.4 NBK acc. to DIN1630 (TDC-DIN 2391) Cr VI free zinc-plated pipes

**Length:** 6 m (can be cut into sections of 2 or 3 m)

code (black pipe)	code (zinc-plated pipe)	O.D. [mm]	wall thickness [mm]	I.D. [mm]	theoretical press. [bar]		weight [kg/m]
					DIN2413 I static	DIN2413 III dynamic	
HR-HPZ1-06X1,0	HR-HPC1-06X1,0	6	1	4	470	396	0.123
HR-HPZ1-06X1,5	-	6	1.5	3	666	526	0.166
HR-HPZ1-08X1,0	HR-HPC1-08X1,0	8	1	6	352	307	0.173
HR-HPZ1-08X1,5	HR-HPC1-08X1,5	8	1.5	5	499	412	0.240
HR-HPZ1-08X2,0	-	8	2	4	705	558	0.296
HR-HPZ1-10X1,0	HR-HPC1-10X1,0	10	1	8	282	249	0.222
HR-HPZ1-10X1,5	HR-HPC1-10X1,5	10	1.5	7	423	357	0.314
HR-HPZ1-10X2,0	HR-HPC1-10X2,0	10	2	6	564	463	0.395
HR-HPZ1-12X1,0	-	12	1	10	235	212	0.271
HR-HPZ1-12X1,5	HR-HPC1-12X1,5	12	1.5	9	353	303	0.389
HR-HPZ1-12X2,0	HR-HPC1-12X2,0	12	2	8	470	396	0.493
HR-HPZ1-12X2,5	-	12	2.5	7	588	474	0.586
HR-HPZ1-14X2,0	HR-HPC1-14X2,0	14	2	10	403	346	0.592
HR-HPZ1-15X1,5	HR-HPC1-15X1,5	15	1.5	12	282	249	0.499
HR-HPZ1-15X2,0	HR-HPC1-15X2,0	15	2	11	376	325	0.641
HR-HPZ1-16X2,0	HR-HPC1-16X2,0	16	2	12	352	307	0.691
HR-HPZ1-16X2,5	HR-HPC1-16X2,5	16	2.5	11	441	370	0.832
HR-HPZ1-18X1,5	HR-HPC1-18X1,5	18	1.5	15	235	209	0.610
HR-HPZ1-18X2,0	HR-HPC1-18X2,0	18	2	14	313	276	0.789
HR-HPZ1-18X2,5	-	18	2.5	13	392	333	0.956
HR-HPZ1-20X2,0	HR-HPC1-20X2,0	20	2	16	282	250	0.888
-	HR-HPC1-20X2,5	20	2.5	15	353	303	1.079
HR-HPZ1-20X3,0	HR-HPC1-20X3,0	20	3	14	423	361	1.260
HR-HPZ1-20X4,0	-	20	4	12	564	463	1.578
HR-HPZ1-22X1,5	HR-HPC1-22X1,5	22	1.5	19	192	173	0.758
HR-HPZ1-22X2,0	HR-HPC1-22X2,0	22	2	18	256	229	0.986
HR-HPZ1-22X2,5	-	22	2.5	17	320	278	1.202
HR-HPZ1-22X3,0	HR-HPC1-22X3,0	22	3	16	384	332	1.406
HR-HPZ1-25X2,5	HR-HPC1-25X2,5	25	2.5	20	282	248	1.387
HR-HPZ1-25X3,0	HR-HPC1-25X3,0	25	3	19	338	296	1.630
HR-HPZ1-25X4,0	HR-HPC1-25X4,0	25	4	17	451	382	2.072
HR-HPZ1-28X1,5	HR-HPC1-28X1,5	28	1.5	25	151	138	0.980
HR-HPZ1-28X2,0	HR-HPC1-28X2,0	28	2	24	201	183	1.282
HR-HPZ1-28X2,5	-	28	2.5	23	252	223	1.572
HR-HPZ1-28X3,0	HR-HPC1-28X3,0	28	3	22	302	267	1.850
HR-HPZ1-30X2,5	-	30	2.5	25	235	209	1.695
HR-HPZ1-30X3,0	HR-HPC1-30X3,0	30	3	24	282	250	1.988
HR-HPZ1-30X4,0	HR-HPC1-30X4,0	30	4	32	376	325	2.565
HR-HPZ1-30X5,0	HR-HPC1-30X5,0	30	5	20	470	396	3.083
HR-HPZ1-35X2,0	HR-HPC1-35X2,0	35	2	31	161	148	1.628
HR-HPZ1-35X3,0	HR-HPC1-35X3,0	35	3	29	242	216	2.367

## HIGH PRESSURE - precision pipes

### HPZ, HPC type (table follow up)

code (black pipe)	code (zinc-plated pipe)	O.D. [mm]	wall thickness [mm]	I.D. [mm]	theoretical press. [bar]		weight [kg/m]
					DIN2413 I static	DIN2413 III dynamic	
HR-HPZ1-35X4,0	-	35	4	27	322	283	3.058
HR-HPZ1-38X4,0	HR-HPC1-38X4,0	38	4	30	297	261	3.350
HR-HPZ1-38X5,0	-	38	5	28	371	321	4.069
HR-HPZ1-38X6,0	-	38	6	26	445	378	4.735
HR-HPZ1-42X2,0	HR-HPC1-42X2,0	42	2	38	134	124	1.973
HR-HPZ1-42X3,0	HR-HPC1-42X3,0	42	3	36	201	183	2.885
HR-HPZ1-42X4,0	HR-HPC1-42X4,0	42	4	34	269	238	3.750

#### Technical delivery conditions:

- pipes normalised in a controlled atmosphere NBK (+N),
- surface protection: phosphated (black pipes) and oiled,
- standard pipe length: 6000 +10 mm,
- smooth pipe edges, sealed with blank plugs,
- standard thickness of zinc coating on pipes of HPC1 type - 8÷12 micrometers.

Tolerances according to DIN 2462 (EN ISO 1127): D4/T3.

**Note! Hydraulic pipe bending and processing machines - see MACHINES AND ACCESORIES**



### HPS type

Seamless precision pipes made of cold-rolled austenitic stainless steel.

**Material:** EN 1.4435, ASTM TP 316L

Dimensions and tolerances acc. to EN 10305-1

**Length:** 6 m (can be cut into sections of 2 or 3 m)

code	O.D. [mm]	wall thickness [mm]	I.D. [mm]	theoretical press. [bar]		weight [kg/m]
				EN 13480-3 2012	ASME B31.3 2012	
HR-HPS1-06X1,0	6	1	4	510	470	0.13
HR-HPS1-06X1,5	6	1.5	3	774	738	0.17
HR-HPS1-08X1,0	8	1	6	366	340	0.18
HR-HPS1-08X1,5	8	1.5	5	587	537	0.24
HR-HPS1-08X2,0	8	2	4	774	738	0.30
HR-HPS1-10X1,0	10	1	8	286	267	0.23
HR-HPS1-10X1,5	10	1.5	7	451	417	0.32
HR-HPS1-10X2,0	10	2	6	635	577	0.40
HR-HPS1-12X1,0	12	1	10	234	220	0.28
HR-HPS1-12X1,5	12	1.5	9	366	340	0.39
HR-HPS1-12X2,0	12	2	8	510	470	0.50
HR-HPS1-14X2,0	14	2	10	426	395	0.60
HR-HPS1-15X1,5	15	1.5	12	286	267	0.51
HR-HPS1-15X2,0	15	2	11	394	366	0.65
HR-HPS1-16X2,0	16	2	12	366	340	0.70
HR-HPS1-18X1,5	18	1.5	15	234	220	0.62

## HIGH PRESSURE - precision pipes

### HPS type (table follow up)

code	O.D. [mm]	wall thickness [mm]	I.D. [mm]	theoretical press. [bar]		weight [kg/m]
				EN 13480-3 2012	ASME B31.3 2012	
HR-HPS1-18X2,0	18	2	14	321	299	0.80
HR-HPS1-20X1,5	20	1.5	17	209	196	0.69
HR-HPS1-20X2,0	20	2	16	286	267	0.90
HR-HPS1-20X2,5	20	2.5	15	366	340	1.09
HR-HPS1-22X1,5	22	1.5	19	189	177	0.77
HR-HPS1-22X2,0	22	2	18	257	241	1.00
HR-HPS1-25X2,0	25	2	21	224	210	1.15
HR-HPS1-25X2,5	25	2.5	20	286	267	1.41
HR-HPS1-25X3,0	25	3	19	350	326	1.65
HR-HPS1-28X1,5	28	1.5	25	146	138	1.00
HR-HPS1-28X2,0	28	2	24	198	186	1.30
HR-HPS1-30X2,5	30	2.5	25	234	220	1.72
HR-HPS1-30X3,0	30	3	24	286	267	2.03
HR-HPS1-35X2,0	35	2	31	156	147	1.65
HR-HPS1-35X3,0	35	3	29	241	226	2.40
HR-HPS1-38X3,0	38	3	32	221	207	2.63
HR-HPS1-38X4,0	38	4	30	302	282	3.41
HR-HPS1-42X3,0	42	3	36	198	186	2.93

#### Technical delivery conditions:

- pipes annealed after cold-rolling process,
- 6 meter sections,
- smooth pipe edges, sealed with blank plugs.

Pipes compliant with:

- EN 10216-5 TC1
- ASTM A213, A269, A312
- DIN 17456, 17458
- JIS G3459, G3463
- BS 3605, 3606

Pipes are also available in imperial (inch) sizes in a diameter range from 1/16" to 1" (from 1.59 to 25.4 mm) - see section PRECISION PIPES.

**Note! Hydraulic pipe bending and processing machines - see MACHINES AND ACCESORIES**

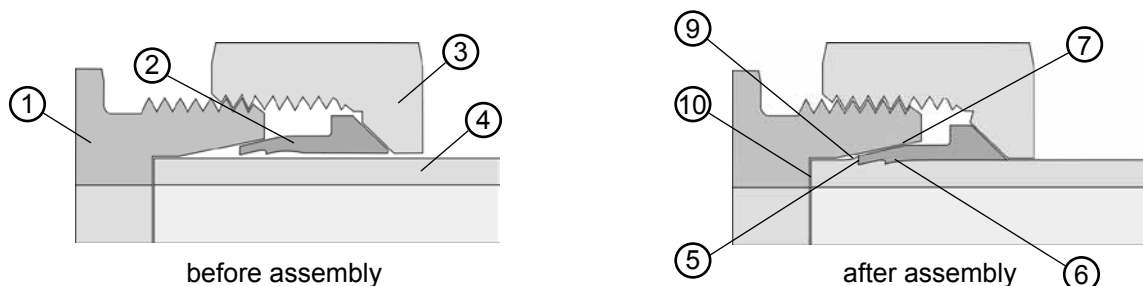
# HIGH PRESSURE - DIN 2353 connectors

## Characteristics and applications

Threaded (pipe) fittings with 24° cone sealing and cutting ring are widely used in many branches of industry to connect steel pipes with outside diameter from 4 to 42 mm. Fittings according to DIN 2353 can also be used to connect flexible hose assemblies (as a body without nut and cutting ring). Manufactured according to ISO 8437-1 or DIN 2353. Used in hydraulic and pneumatic drive and control systems as well as general industrial applications.

### Operation principle of fittings with a cutting ring

A complete connection of a pipe with a hydraulic installation requires: a fitting (1), a cutting ring (2), a nut (3) and a hydraulic precision pipe (4). During assembly, sharp edges of the ring (5 and 6) bite into the pipe according to the 24° cone (7) and creating a "shoulder" (9). The pipe, cut straight at 90° angle, must be pushed firmly against the bottom of the seat (10). Otherwise, the cutting ring does not bite into the pipe deep enough to create a tight connection



The fittings manufactured according to DIN 2353, depending on their usage and pressure, can be divided into the following categories:

- LL (extra light series) - used in small hydraulic and cooling devices, for plastic hoses, compressed air, propane, etc.
- L (light series) - used for standard applications within the working pressure of that range.
- S (heavy series) - used for higher pressure, hydraulic high pressure applications such as: hammering, shipbuilding, mining, chemical industry, heavy equipment.

To identify DIN2353 fitting, a seat "D" (that defines pipe outside diameter), and thread size "M" (metric thread is a standard) must be measured. The table below presents all information needed for quick and easy identification of the range and module number used in a code number at TUBES INTERNATIONAL®. For example: fitting with D = 10 mm and thread size M16x1.5 corresponds to a light range and 10L module.

picture	pipe D [mm]	thread size M [mm]	series	module
	4	M8x1	LL (extra light)	4LL
	6	M10x1		6LL
	8	M12x1		8LL
	6	M12x1.5	L (light)	6L
	8	M14x1.5		8L
	10	M16x1.5		10L
	12	M18x1.5		12L
	15	M22x1.5		15L
	18	M26x1.5		18L
	22	M30x2		22L
	28	M36x2		28L
	35	M45x2		35L
	42	M52x2		42L
	6	M14x1.5	S (heavy)	6S
	8	M16x1.5		8S
	10	M18x1.5		10S
	12	M20x1.5		12S
	14	M22x1.5		14S
	16	M24x1.5		16S
	20	M30x2		20S
	25	M36x2		25S
	30	M42x2		30S
	38	M52x2		38S

# HIGH PRESSURE - DIN 2353 connectors

## Basic information

### Material

DIN 2353 pipe fittings are supplied in two material versions:

- carbon steel (zinc-plated or phosphate-coated) standard seal: NBR rubber,
- stainless steel (AISI 316) standard seal: Viton.

### Working temperature

Allowable working temp. depends on the material of a connector and seal:

- carbon steel: from -40°C up to +120°C
- carbon steel + NBR: from -35°C up to +100°C
- stainless steel: from -60°C up to +400°C
- stainless steel + Viton: from -20°C up to +200°C

### Working Pressure

The max. working pressure (nominal pressure) of DIN 2353 pipe fittings differs according to the type (light series, heavy series), size (pipe outside diameter), material and manufacturer. In the table below, data from different producers showing different types of fittings, made of carbon and stainless steel, is collected. It facilitates preliminary selection. If the required working pressure exceeds the value in the table, please contact TUBES INTERNATIONAL® Technical Department.

series	pipe O.D. [mm]	maximum working pressure [bar]		
		for connection with cutting ring according to PN-ISO 8434-1	for complete fitting according to different producers	
			minimum	maximum
LL	4 ÷ 8	100		
L	6 ÷ 15	250	160	400
	18 ÷ 22	160	100	315
	28 ÷ 42	100	100	250
S	6 ÷ 12 (14)	630	400	630
	16 ÷ 25	400	250	400
	30 ÷ 38	250	250	315

Nominal pressure (max working pressure) given by manufacturers is calculated within static working conditions, the safety factor of 4:1 for the cutting ring connection. For fittings with metal to metal seal and BANJO fittings, the safety factor varies from 1.5:1 to 2.5:1. When choosing a fitting, dynamic pressure load and vibrations in the installation should be also considered.

For temperatures above +100°C, the max. working pressure may require reduction (contact TUBES INTERNATIONAL® Technical Department).

### Medium

Pipe fittings according to DIN 2353 can be used to transfer a wide range of fluids and gases. However, the compatibility of the medium with fitting material and seal type must be always checked. For all applications different from standard hydraulic oils, please contact TUBES INTERNATIONAL® Technical Department.

### Pipes used in installations

Pipes used for the construction of installations,

- seamless steel precision pipes, protected against corrosion (phosphate-coated, zinc-plated), annealed,
- stainless steel precision pipes, cold-drawn, free of annealing scale, heat treated (annealed).

Pipe dimensions (outside diameter, wall thickness) should be chosen according to the required flow rate and working pressure in an installation.



# HIGH PRESSURE - DIN 2353 connectors

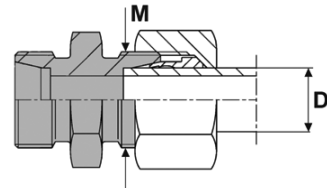
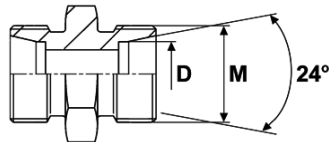
## Identification of DIN 2353 pipe fitting

Fittings according to DIN 2353 have up to 4 different connection ends joining them with the remaining part of the installation. The two most common are:

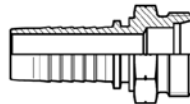
- connectors with 24° cone or a connection end designed for the connection with 24° cone,
- connectors with one end designed to be screwed into the body (of a particular equipment or machine).

### Connectors with 24° cone

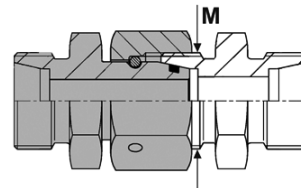
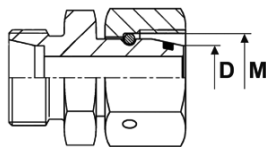
1) Designed to be connected with a pipe with D outside diameter. The parts connect when a cutting ring with D inside diameter is pressed down by a tightening nut with M female thread (code HD-M...).



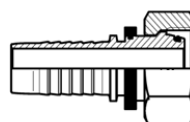
This connection end corresponds exactly to the end fitting of flexible hydraulic hoses such as (code: TI-ZMZ111... - light series and TI-ZMZ112... - heavy series).



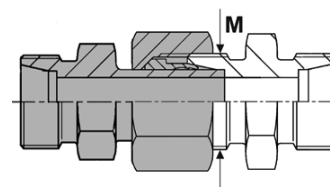
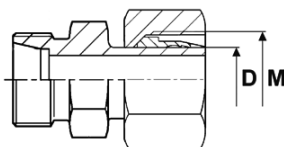
2) Fitting end mating the cone with swivel nut on a conical thread with an additional O-ring.



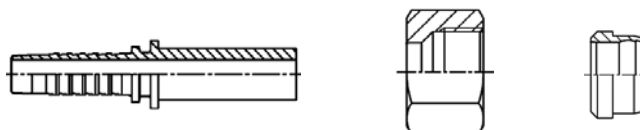
This connection end corresponds exactly to the end fitting of flexible hydraulic hoses type (code: TI-ZMZ111... - light series and TI-ZMZ112... - heavy series).



3) Fitting end mating the cone with swivel nut on a pipe end with a cutting ring and a nut.



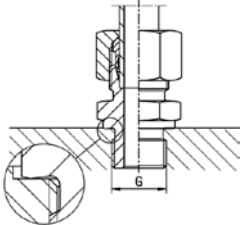
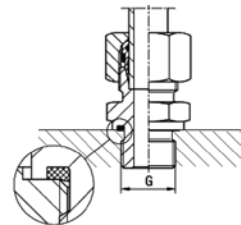
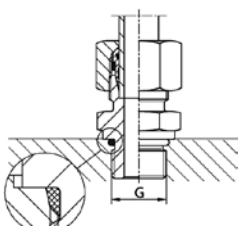
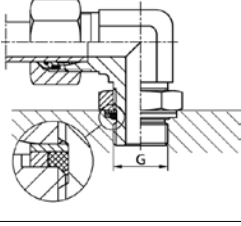
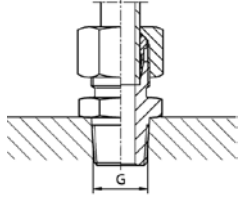
This connection end corresponds exactly to the end fitting of flexible hydraulic hoses such as (code: TI-ZMZ111... - light series and TI-ZMZ112... - heavy series), additionally with a cutting ring.



## HIGH PRESSURE - DIN 2353 connectors

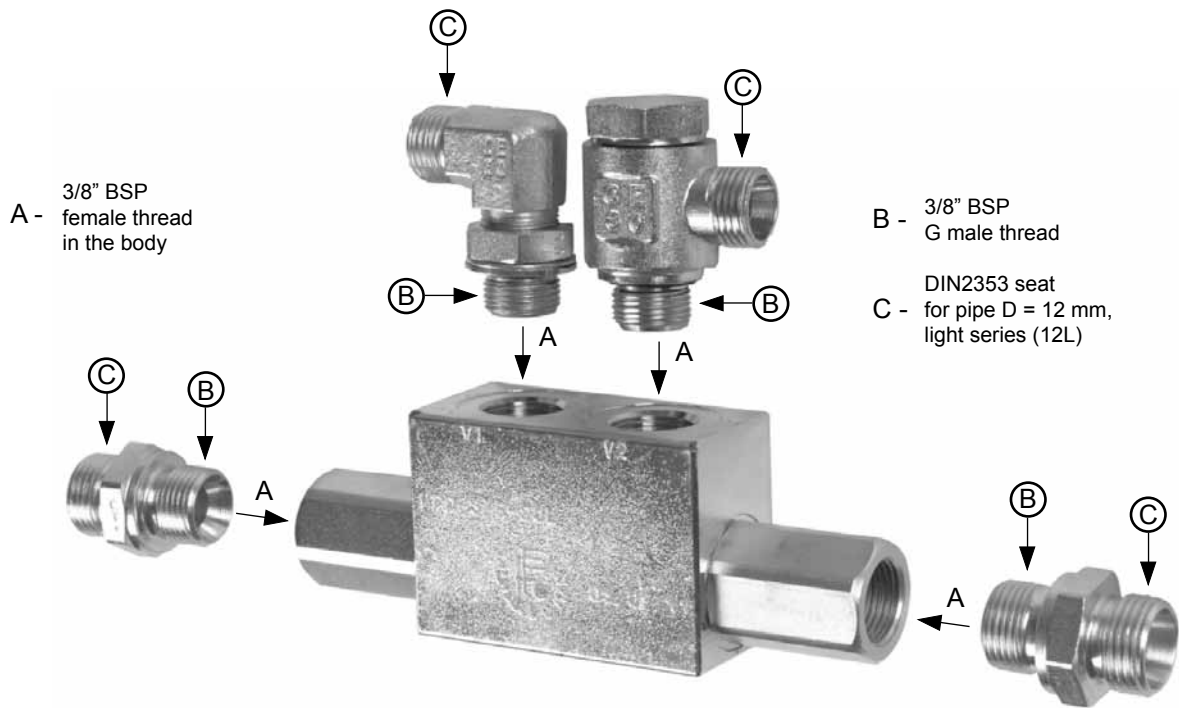
### Connectors - with male thread, designed to be screwed into the body

A connection end designed to be screwed into the body (of a particular equipment or machine) is identified by the size of a G male thread as well as sealing type.

picture	seal type	G-type threaded screw	safety factor
<p>DIN3852 B type</p> 	metal to metal seal	<ul style="list-style-type: none"> <li>- BSP parallel thread</li> <li>- metric parallel thread</li> </ul>	2.5:1
<p>DIN3852 E type</p> 	elastomeric seal (rectangular shape)	<ul style="list-style-type: none"> <li>- BSP parallel thread</li> <li>- metric parallel thread</li> </ul>	4:1
<p>ISO 11926</p> 	O-ring seal	- UNF-UN	4:1
<p>ISO 1179 G type ISO 6149 G type</p> 	O-ring seal with retaining ring	<ul style="list-style-type: none"> <li>- BSP parallel thread</li> <li>- metric parallel thread</li> </ul>	4:1
<p>DIN 3852 ANSI / ASME</p> 	thread seal PTFE tape or anaerobic sealant	<ul style="list-style-type: none"> <li>- BSPT</li> <li>- metric cone thread</li> <li>- NPT</li> </ul>	2.5:1

## HIGH PRESSURE - DIN 2353 connectors

Connectors - with male thread - designed to be screwed into the body



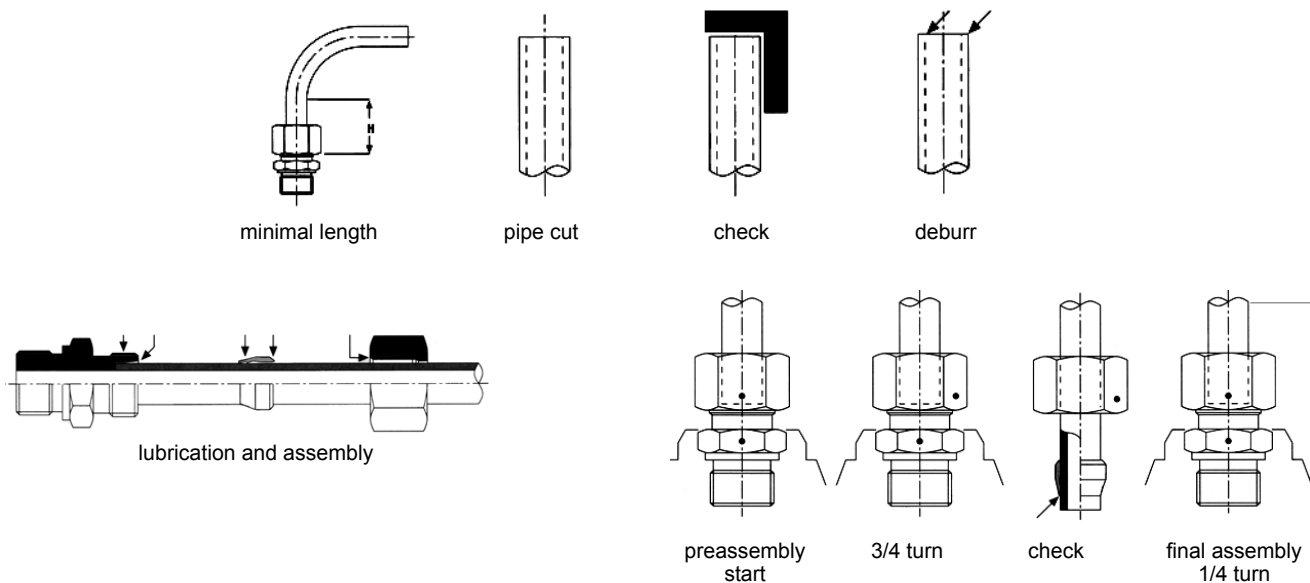
An example of DIN 2353 connectors used with a valve with imperial female thread is presented above. The table below shows the range of G male thread pipe sizes in their most common combination with DIN 2353 connectors (pipe size and series).

picture	module	pipe O. D. [mm]	series type	G thread male pipe sizes		
				BSP and NPT threads (parallel and taper)	metric threads (parallel and taper)	UN-UNF threads
	6L	6	L (light)	1/8	M10x1	7/16-20
	8L	8		1/4	M12x1.5	1/2-20
	10L	10		1/4	M14x1.5	1/2-20
	12L	12		3/8	M16x1.5	9/16-20
	15L	15		1/2	M18x1.5	3/4-16
	18L	18		1/2	M22x1.5	3/4-16
	22L	22		3/4	M26x1.5	1.1/16-12
	28L	28		1	M33x2	1.5/16-12
	35L	35		1.1/4	M42x2	1.5/8-12
	42L	42		1.1/2	M48x2	1.7/8-12
	6S	6	S (heavy)	1/4	M12x1.5	1/2-20
	8S	8		1/4	M14x1.5	1/2-20
	10S	10		3/8	M16x1.5	9/16-20
	12S	12		3/8	M18x1.5	9/16-20
	14S	14		1/2	M20x1.5	3/4-16
	16S	16		1/2	M22x1.5	3/4-16
	20S	20		3/4	M27x2	1.1/16-12
	25S	25		1	M33x2	1.5/16-12
	30S	30		1.1/4	M42x2	1.5/8-12
	38S	38		1.1/2	M48x2	1.7/8-12

# HIGH PRESSURE - DIN 2353 connectors

## DIN 2353 fittings assembly manual

1. Before start, check whether all tools are free from damage.
2. The length of a pipe should be at least twice as long as tightening nut (H length). The roundness of the pipe should meet DIN 2391 standard.
3. Pipe should be cut at 90° angle using a metal cutting saw (roll pipe cutters must not be used). Check the cut angle and deburr internally and externally.
4. Lubricate the inside of the 24° cone seat, thread, tightening nut and cutting ring.
5. Assemble the nut and cutting ring on the pipe as indicated in the picture. Ensure that the head of the cutting ring (thicker end) faces the tightening nut.
6. Push the pipe against the shoulder of the 24° cone of the body. Screw the nut manually until it is finger tight and then tighten the nut with a spanner until the cutting edge of the cutting ring starts to bite into the pipe. The pipe must not rotate during this part of assembly!
7. Push the pipe firmly against the bottom of the cone seat, tighten the nut with a spanner by about 3/4 turn. The nut and the body can be marked to assure the 3/4 turn. While tightening, the cutting ring bites into the pipe creating a "collar" just in front of the ring. Tightening too strong or too weak, weakens the connection and may cause leakage or loosening of the pipe.
8. Loosen the nut, take out the pipe and check whether the collar in front of the cutting ring edge is visible. The collar has to be visible on at least 80% of the pipe circumference. Check if the cutting ring is firmly tightened on the pipe and cannot move alongside. If the grip is not tight enough, the preassembly must be repeated.
9. If the preassembly was correct, push the pipe against the bottom, tighten again about 1/4 turn beyond the point of clearly perceptible resistance. While tightening the body must be held firm by a spanner or a vice.
10. Preassembly of stainless steel fittings should be performed using special tools.



## Assembly machines for DIN 2353 rings

Pre-assembly of DIN2353 cutting rings on hydraulic pipes can be performed on special machines made for that purpose (see chapter MACHINES AND ACCESSORIES - hose assembly production).



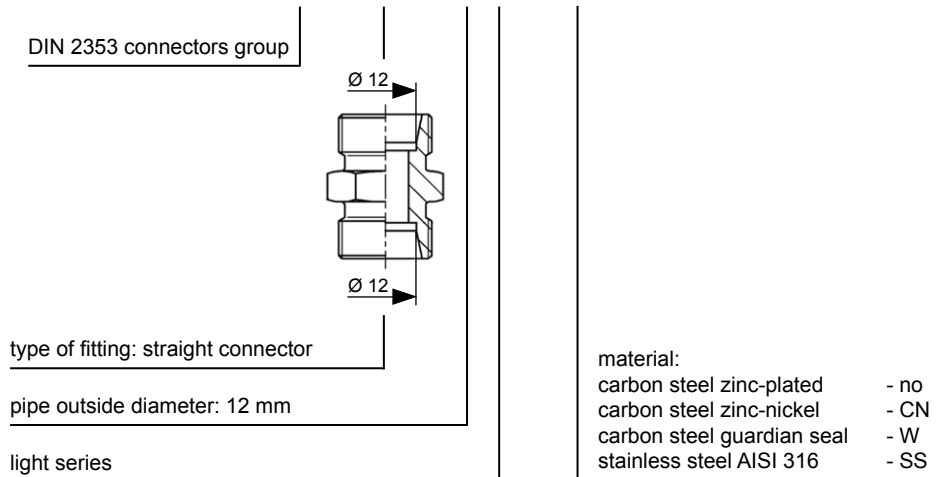
## HIGH PRESSURE - DIN 2353 connectors

### Codes of connectors in the catalogue

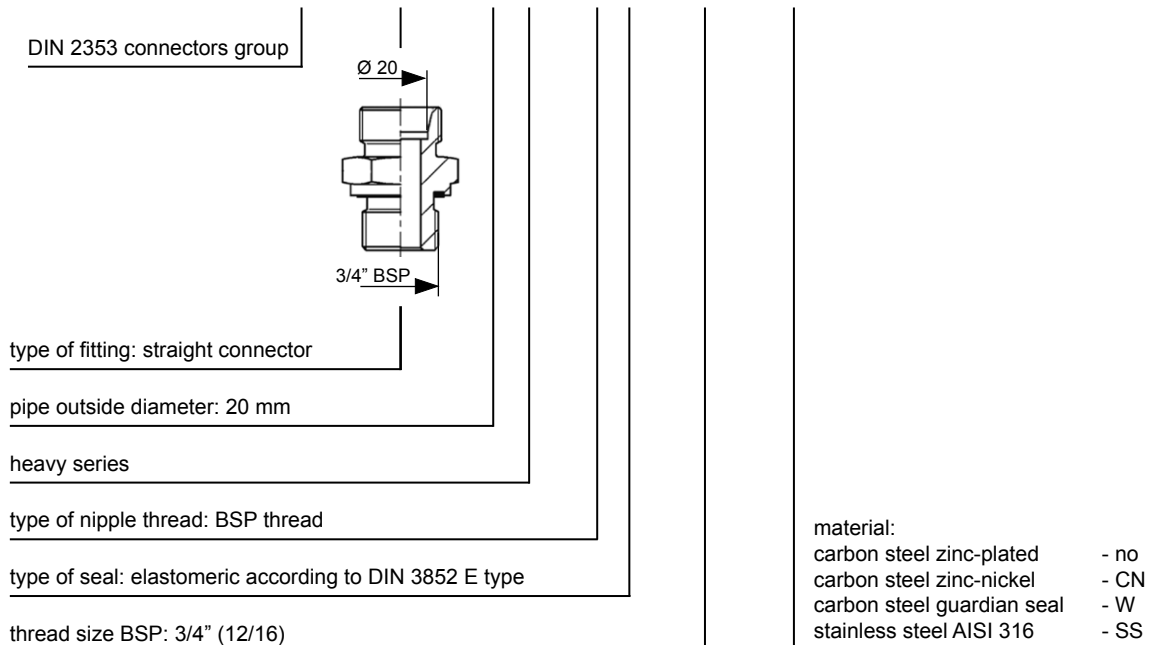
Connectors are marked with special codes in our catalogue - they should be used when placing an order.

Code example:


#### HD - G - 12L - SS

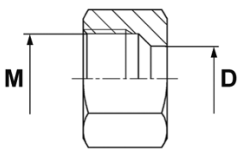


#### HD - GE - 20S - BE - 12 - SS

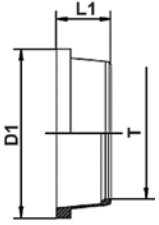


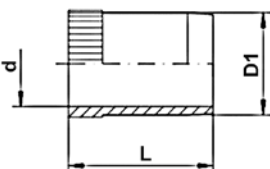
## HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	code (galvanized steel)	code (AISI 316)	D [mm]
Cutting ring  	LL	100	HD-D-04LL	HD-D-04LL-SS	-	-	4
			HD-D-06LL	HD-D-06LL-SS	-	-	6
			HD-D-08LL	HD-D-08LL-SS	-	-	8
	L	315	HD-D-06	HD-D-06-SS	HD-DU-06L	HD-DU-06L-SS	6
			HD-D-08	HD-D-08-SS	HD-DU-08L	HD-DU-08L-SS	8
			HD-D-10	HD-D-10-SS	HD-DU-10L	HD-DU-10L-SS	10
			HD-D-12	HD-D-12-SS	HD-DU-12L	HD-DU-12L-SS	12
			HD-D-15	HD-D-15-SS	HD-DU-15L	HD-DU-15L-SS	15
			HD-D-18	HD-D-18-SS	HD-DU-18L	HD-DU-18L-SS	18
		160	HD-D-22	HD-D-22-SS	HD-DU-22L	HD-DU-22L-SS	22
			HD-D-28	HD-D-28-SS	HD-DU-28L	HD-DU-28L-SS	28
			HD-D-35	HD-D-35-SS	HD-DU-35L	HD-DU-35L-SS	35
			HD-D-42	HD-D-42-SS	HD-DU-42L	HD-DU-42L-SS	42
	S	630	HD-D-06	HD-D-06-SS	HD-DU-06S	HD-DU-06S-SS	6
			HD-D-08	HD-D-08-SS	HD-DU-08S	HD-DU-08S-SS	8
			HD-D-10	HD-D-10-SS	HD-DU-10S	HD-DU-10S-SS	10
			HD-D-12	HD-D-12-SS	HD-DU-12S	HD-DU-12S-SS	12
			HD-D-14	HD-D-14-SS	HD-DU-14S	HD-DU-14S-SS	14
		400	HD-D-16	HD-D-16-SS	HD-DU-16S	HD-DU-16S-SS	16
			HD-D-20	HD-D-20-SS	HD-DU-20S	HD-DU-20S-SS	20
			HD-D-25	HD-D-25-SS	HD-DU-25S	HD-DU-25S-SS	25
			HD-D-30	HD-D-30-SS	HD-DU-30S	HD-DU-30S-SS	30
			HD-D-38	HD-D-38-SS	HD-DU-38S	HD-DU-38S-SS	38

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]
Nut  	LL	100	HD-M-04LL	HD-M-04LL-SS	4	8x1
			HD-M-06LL	HD-M-06LL-SS	6	10x1
			HD-M-08LL	HD-M-08LL-SS	8	12x1
	L	315	HD-M-06L	HD-M-06L-SS	6	12x1.5
			HD-M-08L	HD-M-08L-SS	8	14x1.5
			HD-M-10L	HD-M-10L-SS	10	16x1.5
			HD-M-12L	HD-M-12L-SS	12	18x1.5
			HD-M-15L	HD-M-15L-SS	15	22x1.5
			HD-M-18L	HD-M-18L-SS	18	26x1.5
		160	HD-M-22L	HD-M-22L-SS	22	30x2
			HD-M-28L	HD-M-28L-SS	28	36x2
			HD-M-35L	HD-M-35L-SS	35	45x2
			HD-M-42L	HD-M-42L-SS	42	52x2
	S	630	HD-M-06S	HD-M-06S-SS	6	14x1.5
			HD-M-08S	HD-M-08S-SS	8	16x1.5
			HD-M-10S	HD-M-10S-SS	10	18x1.5
			HD-M-12S	HD-M-12S-SS	12	20x1.5
			HD-M-14S	HD-M-14S-SS	14	22x1.5
		400	HD-M-16S	HD-M-16S-SS	16	24x1.5
			HD-M-20S	HD-M-20S-SS	20	30x2
			HD-M-25S	HD-M-25S-SS	25	36x2
			HD-M-30S	HD-M-30S-SS	30	42x2
			HD-M-38S	HD-M-38S-SS	38	52x2

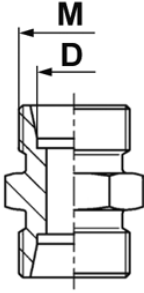
## HIGH PRESSURE - DIN 2353 connectors

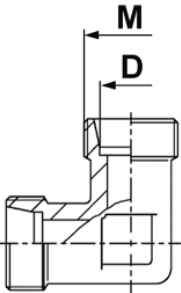
description	series	press. [bar]	code (FPM rubber)	T [mm]	D1 [mm]	L1 [mm]
Profiled seal, material: Viton   <b>UDV</b>	L/S	630	HD-UDV-06LS	6	9	7.5
			HD-UDV-08LS	8	11	7.5
			HD-UDV-10LS	10	13.5	7.5
			HD-UDV-12LS	12	15.5	7
	L	400	HD-UDV-15L	15	19	7
			HD-UDV-18L	18	23	8
		250	HD-UDV-22L	22	26.5	8
			HD-UDV-28L	28	32.5	8
			HD-UDV-35L	35	41.5	8
			HD-UDV-42L	42	48.5	8
	S	630	HD-UDV-14S	14	19	7
			HD-UDV-16S	16	21	7.5
		420	HD-UDV-20S	20	26	9.5
			HD-UDV-25S	25	31.5	9
			HD-UDV-30S	30	37.5	8
		315	HD-UDV-38S	38	46	8

description	pipe I.D. [mm]	code (brass)	code (AISI 316)	d [mm]	D [mm]	L [mm]
Reinforcing insert for thin-walled pipes DIN 2353   <b>VS</b>	4	HD-VS-04	HD-VS-04-SS	2.5	3.8	17
	5	HD-VS-05	HD-VS-05-SS	3.5	4.8	17
	6	HD-VS-06	HD-VS-06-SS	4.5	5.8	17 / 14*
	7	-	HD-VS-07-SS	5.5	6.8	17
	8	HD-VS-08	HD-VS-08-SS	6.5	7.8	17 / 15.5*
	9	HD-VS-09	HD-VS-09-SS	7.5	8.8	17
	10	HD-VS-10	HD-VS-10-SS	8.5	9.8	17 / 15.5*
	11	-	HD-VS-11-SS	9.5	10.8	17
	12	HD-VS-12	HD-VS-12-SS	10.5	11.8	17
	13	HD-VS-13	HD-VS-13-SS	11.5	12.8	18 / 17*
	14	-	HD-VS-14-SS	12	13.8	17
	15	HD-VS-15	HD-VS-15-SS	13	14.8	18
	16	HD-VS-16	HD-VS-16-SS	14	15.8	18
	17	-	HD-VS-17-SS	15	16.8	20
	18	HD-VS-18	HD-VS-18-SS	16	17.8	22 / 20*
	19	HD-VS-19	HD-VS-19-SS	17	18.8	20
	20	-	HD-VS-20-SS	18	19.8	20
	22	-	HD-VS-22-SS	20	21.8	24
	23	-	HD-VS-23-SS	21	22.8	24
	24	HD-VS-24	HD-VS-24-SS	22	23.8	20 / 23.5*
	25	HD-VS-25	HD-VS-25-SS	23	24.8	20 / 23.5*
	26	-	HD-VS-26-SS	24	25.8	23.5
	30	-	HD-VS-30-SS	27.8	29.8	26.5
	31	HD-VS-31	HD-VS-31-SS	28	30.8	23 / 26.5*
	32	-	HD-VS-32-SS	29.5	31.8	26.5
	33	-	HD-VS-33-SS	30	32.8	26.5
	38	HD-VS-38	HD-VS-38-SS	35	37.8	24 / 26.5*

\*- L length is different for stainless steel

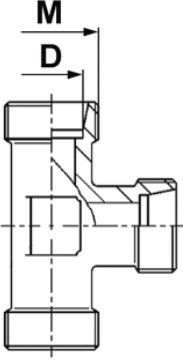
## HIGH PRESSURE - DIN 2353 connectors

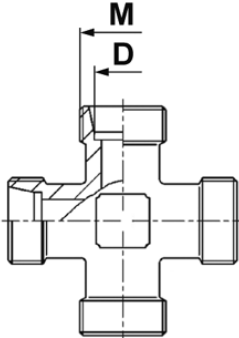
description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]
<b>Straight connector</b>  	LL	100	HD-G-04LL	HD-G-04LL-SS	4	8x1
			HD-G-06LL	HD-G-06LL-SS	6	10x1
			HD-G-08LL	HD-G-08LL-SS	8	12x1
	L	315	HD-G-06L	HD-G-06L-SS	6	12x1.5
			HD-G-08L	HD-G-08L-SS	8	14x1.5
			HD-G-10L	HD-G-10L-SS	10	16x1.5
			HD-G-12L	HD-G-12L-SS	12	18x1.5
			HD-G-15L	HD-G-15L-SS	15	22x1.5
			HD-G-18L	HD-G-18L-SS	18	26x1.5
		160	HD-G-22L	HD-G-22L-SS	22	30x2
			HD-G-28L	HD-G-28L-SS	28	36x2
			HD-G-35L	HD-G-35L-SS	35	45x2
			HD-G-42L	HD-G-42L-SS	42	52x2
	S	630	HD-G-06S	HD-G-06S-SS	6	14x1.5
			HD-G-08S	HD-G-08S-SS	8	16x1.5
			HD-G-10S	HD-G-10S-SS	10	18x1.5
			HD-G-12S	HD-G-12S-SS	12	20x1.5
			HD-G-14S	HD-G-14S-SS	14	22x1.5
			HD-G-16S	HD-G-16S-SS	16	24x1.5
		400	HD-G-20S	HD-G-20S-SS	20	30x2
			HD-G-25S	HD-G-25S-SS	25	36x2
			HD-G-30S	HD-G-30S-SS	30	42x2
			HD-G-38S	HD-G-38S-SS	38	52x2

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]
<b>90° elbow connector</b>  	LL	100	HD-W-04LL	HD-W-04LL-SS	4	8x1
			HD-W-06LL	HD-W-06LL-SS	6	10x1
			HD-W-08LL	HD-W-08LL-SS	8	12x1
	L	315	HD-W-06L	HD-W-06L-SS	6	12x1.5
			HD-W-08L	HD-W-08L-SS	8	14x1.5
			HD-W-10L	HD-W-10L-SS	10	16x1.5
			HD-W-12L	HD-W-12L-SS	12	18x1.5
			HD-W-15L	HD-W-15L-SS	15	22x1.5
			HD-W-18L	HD-W-18L-SS	18	26x1.5
		160	HD-W-22L	HD-W-22L-SS	22	30x2
			HD-W-28L	HD-W-28L-SS	28	36x2
			HD-W-35L	HD-W-35L-SS	35	45x2
			HD-W-42L	HD-W-42L-SS	42	52x2
	S	630	HD-W-06S	HD-W-06S-SS	6	14x1.5
			HD-W-08S	HD-W-08S-SS	8	16x1.5
			HD-W-10S	HD-W-10S-SS	10	18x1.5
			HD-W-12S	HD-W-12S-SS	12	20x1.5
			HD-W-14S	HD-W-14S-SS	14	22x1.5
			HD-W-16S	HD-W-16S-SS	16	24x1.5
		400	HD-W-20S	HD-W-20S-SS	20	30x2
			HD-W-25S	HD-W-25S-SS	25	36x2
			HD-W-30S	HD-W-30S-SS	30	42x2
			HD-W-38S	HD-W-38S-SS	38	52x2

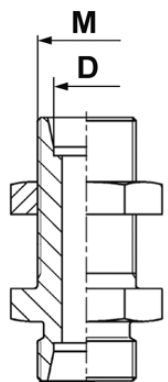


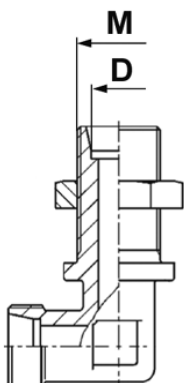
## HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]
<b>Tee connector</b>  	L	315	HD-T-06L	HD-T-06L-SS	6	12x1.5
			HD-T-08L	HD-T-08L-SS	8	14x1.5
			HD-T-10L	HD-T-10L-SS	10	16x1.5
			HD-T-12L	HD-T-12L-SS	12	18x1.5
			HD-T-15L	HD-T-15L-SS	15	22x1.5
			HD-T-18L	HD-T-18L-SS	18	26x1.5
		160	HD-T-22L	HD-T-22L-SS	22	30x2
			HD-T-28L	HD-T-28L-SS	28	36x2
			HD-T-35L	HD-T-35L-SS	35	45x2
			HD-T-42L	HD-T-42L-SS	42	52x2
	S	630	HD-T-06S	HD-T-06S-SS	6	14x1.5
			HD-T-08S	HD-T-08S-SS	8	16x1.5
			HD-T-10S	HD-T-10S-SS	10	18x1.5
			HD-T-12S	HD-T-12S-SS	12	20x1.5
			HD-T-14S	HD-T-14S-SS	14	22x1.5
		400	HD-T-16S	HD-T-16S-SS	16	24x1.5
			HD-T-20S	HD-T-20S-SS	20	30x2
			HD-T-25S	HD-T-25S-SS	25	36x2
			HD-T-30S	HD-T-30S-SS	30	42x2
			HD-T-38S	HD-T-38S-SS	38	52x2

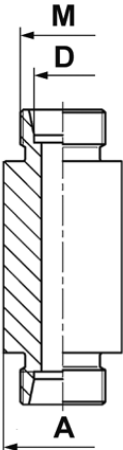
description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]
<b>Cross connector</b>  	L	315	HD-K-06L	HD-K-06L-SS	6	12x1.5
			HD-K-08L	HD-K-08L-SS	8	14x1.5
			HD-K-10L	HD-K-10L-SS	10	16x1.5
			HD-K-12L	HD-K-12L-SS	12	18x1.5
			HD-K-15L	HD-K-15L-SS	15	22x1.5
			HD-K-18L	HD-K-18L-SS	18	26x1.5
		160	HD-K-22L	HD-K-22L-SS	22	30x2
			HD-K-28L	HD-K-28L-SS	28	36x2
			HD-K-35L	HD-K-35L-SS	35	45x2
			HD-K-42L	HD-K-42L-SS	42	52x2
	S	630	HD-K-06S	HD-K-06S-SS	6	14x1.5
			HD-K-08S	HD-K-08S-SS	8	16x1.5
			HD-K-10S	HD-K-10S-SS	10	18x1.5
			HD-K-12S	HD-K-12S-SS	12	20x1.5
			HD-K-14S	HD-K-14S-SS	14	22x1.5
		400	HD-K-16S	HD-K-16S-SS	16	24x1.5
			HD-K-20S	HD-K-20S-SS	20	30x2
			HD-K-25S	HD-K-25S-SS	25	36x2
			HD-K-30S	HD-K-30S-SS	30	42x2
			HD-K-38S	HD-K-38S-SS	38	52x2

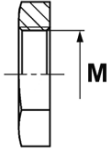
## HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]
Straight bulkhead connector    <b>SV</b>	L	315	HD-SV-06L	HD-SV-06L-SS	6	12x1.5
			HD-SV-08L	HD-SV-08L-SS	8	14x1.5
			HD-SV-10L	HD-SV-10L-SS	10	16x1.5
			HD-SV-12L	HD-SV-12L-SS	12	18x1.5
			HD-SV-15L	HD-SV-15L-SS	15	22x1.5
			HD-SV-18L	HD-SV-18L-SS	18	26x1.5
		160	HD-SV-22L	HD-SV-22L-SS	22	30x2
			HD-SV-28L	HD-SV-28L-SS	28	36x2
			HD-SV-35L	HD-SV-35L-SS	35	45x2
			HD-SV-42L	HD-SV-42L-SS	42	52x2
	S	630	HD-SV-06S	HD-SV-06S-SS	6	14x1.5
			HD-SV-08S	HD-SV-08S-SS	8	16x1.5
			HD-SV-10S	HD-SV-10S-SS	10	18x1.5
			HD-SV-12S	HD-SV-12S-SS	12	20x1.5
			HD-SV-14S	HD-SV-14S-SS	14	22x1.5
		400	HD-SV-16S	HD-SV-16S-SS	16	24x1.5
			HD-SV-20S	HD-SV-20S-SS	20	30x2
			HD-SV-25S	HD-SV-25S-SS	25	36x2
			HD-SV-30S	HD-SV-30S-SS	30	42x2
			HD-SV-38S	HD-SV-38S-SS	38	52x2

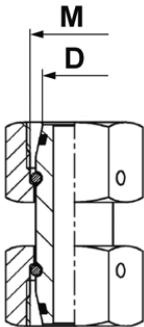
description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]
90° elbow bulkhead connector    <b>WSV</b>	L	315	HD-WSV-06L	HD-WSV-06L-SS	6	12x1.5
			HD-WSV-08L	HD-WSV-08L-SS	8	14x1.5
			HD-WSV-10L	HD-WSV-10L-SS	10	16x1.5
			HD-WSV-12L	HD-WSV-12L-SS	12	18x1.5
			HD-WSV-15L	HD-WSV-15L-SS	15	22x1.5
			HD-WSV-18L	HD-WSV-18L-SS	18	26x1.5
		160	HD-WSV-22L	HD-WSV-22L-SS	22	30x2
			HD-WSV-28L	HD-WSV-28L-SS	28	36x2
			HD-WSV-35L	HD-WSV-35L-SS	35	45x2
			HD-WSV-42L	HD-WSV-42L-SS	42	52x2
	S	630	HD-WSV-06S	HD-WSV-06S-SS	6	14x1.5
			HD-WSV-08S	HD-WSV-08S-SS	8	16x1.5
			HD-WSV-10S	HD-WSV-10S-SS	10	18x1.5
			HD-WSV-12S	HD-WSV-12S-SS	12	20x1.5
			HD-WSV-14S	HD-WSV-14S-SS	14	22x1.5
		400	HD-WSV-16S	HD-WSV-16S-SS	16	24x1.5
			HD-WSV-20S	HD-WSV-20S-SS	20	30x2
			HD-WSV-25S	HD-WSV-25S-SS	25	36x2
			HD-WSV-30S	HD-WSV-30S-SS	30	42x2
			HD-WSV-38S	HD-WSV-38S-SS	38	52x2

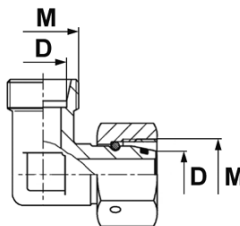
## HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (black steel)	code (AISI 316)	D [mm]	M [mm]	A [mm]
Welding bulkhead connector  <b>ESV</b>	L	315	HD-ESV-06L	HD-ESV-06L-SS	6	12x1.5	18
			HD-ESV-08L	HD-ESV-08L-SS	8	14x1.5	20
			HD-ESV-10L	HD-ESV-10L-SS	10	16x1.5	22
			HD-ESV-12L	HD-ESV-12L-SS	12	18x1.5	25
			HD-ESV-15L	HD-ESV-15L-SS	15	22x1.5	28
			HD-ESV-18L	HD-ESV-18L-SS	18	26x1.5	32
		160	HD-ESV-22L	HD-ESV-22L-SS	22	30x2	36
			HD-ESV-28L	HD-ESV-28L-SS	28	36x2	40
			HD-ESV-35L	HD-ESV-35L-SS	35	45x2	50
			HD-ESV-42L	HD-ESV-42L-SS	42	52x2	60
	S	630	HD-ESV-06S	HD-ESV-06S-SS	6	14x1.5	20
			HD-ESV-08S	HD-ESV-08S-SS	8	16x1.5	22
			HD-ESV-10S	HD-ESV-10S-SS	10	18x1.5	25
			HD-ESV-12S	HD-ESV-12S-SS	12	20x1.5	28
			HD-ESV-14S	HD-ESV-14S-SS	14	22x1.5	30
		400	HD-ESV-16S	HD-ESV-16S-SS	16	24x1.5	35
			HD-ESV-20S	HD-ESV-20S-SS	20	30x2	38
			HD-ESV-25S	HD-ESV-25S-SS	25	36x2	45
			HD-ESV-30S	HD-ESV-30S-SS	30	42x2	50
		315	HD-ESV-38S	HD-ESV-38S-SS	38	52x2	60

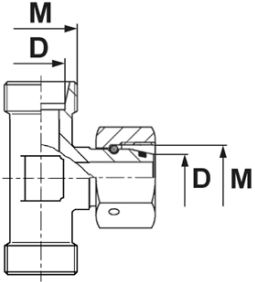
description	code (galvanized steel)	code (AISI 316)	M [mm]
Flat nut for bulkhead connectors  <b>MP</b>	HD-MP-06L	HD-MP-06L-SS	12x1.5
	HD-MP-08L-06S	HD-MP-08L-06S-SS	14x1.5
	HD-MP-10L-08S	HD-MP-10L-08S-SS	16x1.5
	HD-MP-12L-10S	HD-MP-12L-10S-SS	18x1.5
	HD-MP-12S	HD-MP-12S-SS	20x1.5
	HD-MP-15L-14S	HD-MP-15L-14S-SS	22x1.5
	HD-MP-16S	HD-MP-16S-SS	24x1.5
	HD-MP-18L	HD-MP-18L-SS	26x1.5
	HD-MP-22L-20S	HD-MP-22L-20S-SS	30x2
	HD-MP-28L-25S	HD-MP-28L-25S-SS	36x2
	HD-MP-30S	HD-MP-30S-SS	42x2
	HD-MP-35L	HD-MP-35L-SS	48x2
	HD-MP-42L-38S	HD-MP-42L-38S-SS	52x2

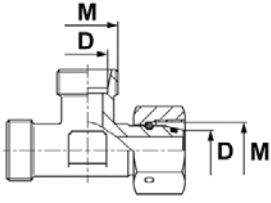
## HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]
Adjustable straight connector, O-ring seal    <b>SNV</b>	L	315	HD-SNV-06L	HD-SNV-06L-SS	6	12x1.5
			HD-SNV-08L	HD-SNV-08L-SS	8	14x1.5
			HD-SNV-10L	HD-SNV-10L-SS	10	16x1.5
			HD-SNV-12L	HD-SNV-12L-SS	12	18x1.5
			HD-SNV-15L	HD-SNV-15L-SS	15	22x1.5
			HD-SNV-18L	HD-SNV-18L-SS	18	26x1.5
		160	HD-SNV-22L	HD-SNV-22L-SS	22	30x2
			HD-SNV-28L	HD-SNV-28L-SS	28	36x2
			HD-SNV-35L	HD-SNV-35L-SS	35	45x2
			HD-SNV-42L	HD-SNV-42L-SS	42	52x2
	S	630	HD-SNV-06S	HD-SNV-06S-SS	6	14x1.5
			HD-SNV-08S	HD-SNV-08S-SS	8	16x1.5
			HD-SNV-10S	HD-SNV-10S-SS	10	18x1.5
			HD-SNV-12S	HD-SNV-12S-SS	12	20x1.5
			HD-SNV-14S	HD-SNV-14S-SS	14	22x1.5
		400	HD-SNV-16S	HD-SNV-16S-SS	16	24x1.5
			HD-SNV-20S	HD-SNV-20S-SS	20	30x2
			HD-SNV-25S	HD-SNV-25S-SS	25	36x2
			HD-SNV-30S	HD-SNV-30S-SS	30	42x2
		315	HD-SNV-38S	HD-SNV-38S-SS	38	52x2

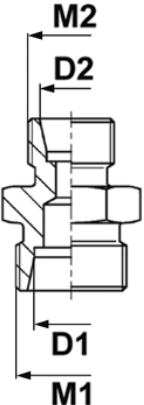
description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]
Adjustable 90° elbow connector, O-ring seal    <b>EVWO</b>	L	315	HD-EVWO-06L	HD-EVWO-06L-SS	6	12x1.5
			HD-EVWO-08L	HD-EVWO-08L-SS	8	14x1.5
			HD-EVWO-10L	HD-EVWO-10L-SS	10	16x1.5
			HD-EVWO-12L	HD-EVWO-12L-SS	12	18x1.5
			HD-EVWO-15L	HD-EVWO-15L-SS	15	22x1.5
			HD-EVWO-18L	HD-EVWO-18L-SS	18	26x1.5
		160	HD-EVWO-22L	HD-EVWO-22L-SS	22	30x2
			HD-EVWO-28L	HD-EVWO-28L-SS	28	36x2
			HD-EVWO-35L	HD-EVWO-35L-SS	35	45x2
			HD-EVWO-42L	HD-EVWO-42L-SS	42	52x2
	S	630	HD-EVWO-06S	HD-EVWO-06S-SS	6	14x1.5
			HD-EVWO-08S	HD-EVWO-08S-SS	8	16x1.5
			HD-EVWO-10S	HD-EVWO-10S-SS	10	18x1.5
			HD-EVWO-12S	HD-EVWO-12S-SS	12	20x1.5
			HD-EVWO-14S	HD-EVWO-14S-SS	14	22x1.5
		400	HD-EVWO-16S	HD-EVWO-16S-SS	16	24x1.5
			HD-EVWO-20S	HD-EVWO-20S-SS	20	30x2
			HD-EVWO-25S	HD-EVWO-25S-SS	25	36x2
			HD-EVWO-30S	HD-EVWO-30S-SS	30	42x2
		315	HD-EVWO-38S	HD-EVWO-38S-SS	38	52x2

## HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]
Adjustable tee connector, O-ring seal    <b>EVTO</b>	L	315	HD-EVTO-06L	HD-EVTO-06L-SS	6	12x1.5
			HD-EVTO-08L	HD-EVTO-08L-SS	8	14x1.5
			HD-EVTO-10L	HD-EVTO-10L-SS	10	16x1.5
			HD-EVTO-12L	HD-EVTO-12L-SS	12	18x1.5
			HD-EVTO-15L	HD-EVTO-15L-SS	15	22x1.5
			HD-EVTO-18L	HD-EVTO-18L-SS	18	26x1.5
		160	HD-EVTO-22L	HD-EVTO-22L-SS	22	30x2
			HD-EVTO-28L	HD-EVTO-28L-SS	28	36x2
			HD-EVTO-35L	HD-EVTO-35L-SS	35	45x2
			HD-EVTO-42L	HD-EVTO-42L-SS	42	52x2
	S	630	HD-EVTO-06S	HD-EVTO-06S-SS	6	14x1.5
			HD-EVTO-08S	HD-EVTO-08S-SS	8	16x1.5
			HD-EVTO-10S	HD-EVTO-10S-SS	10	18x1.5
			HD-EVTO-12S	HD-EVTO-12S-SS	12	20x1.5
			HD-EVTO-14S	HD-EVTO-14S-SS	14	22x1.5
		400	HD-EVTO-16S	HD-EVTO-16S-SS	16	24x1.5
			HD-EVTO-20S	HD-EVTO-20S-SS	20	30x2
			HD-EVTO-25S	HD-EVTO-25S-SS	25	36x2
			HD-EVTO-30S	HD-EVTO-30S-SS	30	42x2
		315	HD-EVTO-38S	HD-EVTO-38S-SS	38	52x2

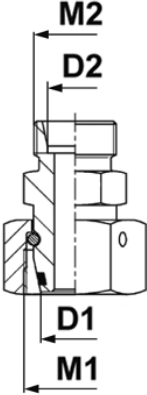
description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]
Asymmetric adjustable tee connector, O-ring seal    <b>EVLO</b>	L	315	HD-EVLO-06L	HD-EVLO-06L-SS	6	12x1.5
			HD-EVLO-08L	HD-EVLO-08L-SS	8	14x1.5
			HD-EVLO-10L	HD-EVLO-10L-SS	10	16x1.5
			HD-EVLO-12L	HD-EVLO-12L-SS	12	18x1.5
			HD-EVLO-15L	HD-EVLO-15L-SS	15	22x1.5
			HD-EVLO-18L	HD-EVLO-18L-SS	18	26x1.5
		160	HD-EVLO-22L	HD-EVLO-22L-SS	22	30x2
			HD-EVLO-28L	HD-EVLO-28L-SS	28	36x2
			HD-EVLO-35L	HD-EVLO-35L-SS	35	45x2
			HD-EVLO-42L	HD-EVLO-42L-SS	42	52x2
	S	630	HD-EVLO-06S	HD-EVLO-06S-SS	6	14x1.5
			HD-EVLO-08S	HD-EVLO-08S-SS	8	16x1.5
			HD-EVLO-10S	HD-EVLO-10S-SS	10	18x1.5
			HD-EVLO-12S	HD-EVLO-12S-SS	12	20x1.5
			HD-EVLO-14S	HD-EVLO-14S-SS	14	22x1.5
		400	HD-EVLO-16S	HD-EVLO-16S-SS	16	24x1.5
			HD-EVLO-20S	HD-EVLO-20S-SS	20	30x2
			HD-EVLO-25S	HD-EVLO-25S-SS	25	36x2
			HD-EVLO-30S	HD-EVLO-30S-SS	30	42x2
		315	HD-EVLO-38S	HD-EVLO-38S-SS	38	52x2

## HIGH PRESSURE - DIN 2353 connectors

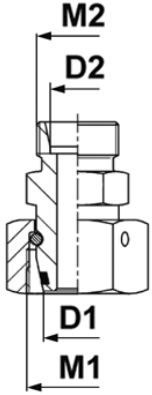
description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D1 [mm]	M1 [mm]	D2 [mm]	M2 [mm]
Reducing connector  	L	315	HD-GR-08-06L	HD-GR-08-06L-SS	8	14x1.5	6	12x1.5
			HD-GR-10-06L	HD-GR-10-06L-SS	10	16x1.5	6	12x1.5
			HD-GR-10-08L	HD-GR-10-08L-SS	10	16x1.5	8	14x1.5
			HD-GR-12-06L	HD-GR-12-06L-SS	12	18x1.5	6	12x1.5
			HD-GR-12-08L	HD-GR-12-08L-SS	12	18x1.5	8	14x1.5
			HD-GR-12-10L	HD-GR-12-10L-SS	12	18x1.5	10	16x1.5
			HD-GR-15-10L	HD-GR-15-10L-SS	15	22x1.5	10	16x1.5
			HD-GR-15-12L	HD-GR-15-12L-SS	15	22x1.5	12	18x1.5
			HD-GR-18-10L	HD-GR-18-10L-SS	18	26x1.5	10	16x1.5
			HD-GR-18-12L	HD-GR-18-12L-SS	18	26x1.5	12	18x1.5
			HD-GR-18-15L	HD-GR-18-15L-SS	18	26x1.5	15	22x1.5
		160	HD-GR-22-12L	HD-GR-22-12L-SS	22	30x2	12	18x1.5
			HD-GR-22-15L	HD-GR-22-15L-SS	22	30x2	15	22x1.5
			HD-GR-22-18L	HD-GR-22-18L-SS	22	30x2	18	26x1.5
			HD-GR-28-18L	HD-GR-28-18L-SS	28	36x2	18	26x1.5
			HD-GR-28-22L	HD-GR-28-22L-SS	28	36x2	22	30x2
			HD-GR-35-22L	HD-GR-35-22L-SS	35	45x2	22	30x2
			HD-GR-35-28L	HD-GR-35-28L-SS	35	45x2	28	36x2
	S	630	HD-GR-08-06S	HD-GR-08-06S-SS	8	16x1.5	6	14x1.5
			HD-GR-10-06S	HD-GR-10-06S-SS	10	18x1.5	6	14x1.5
			HD-GR-10-08S	HD-GR-10-08S-SS	10	18x1.5	8	16x1.5
			HD-GR-12-06S	HD-GR-12-06S-SS	12	20x1.5	6	14x1.5
			HD-GR-12-08S	HD-GR-12-08S-SS	12	20x1.5	8	16x1.5
			HD-GR-12-10S	HD-GR-12-10S-SS	12	20x1.5	10	18x1.5
			HD-GR-14-10S	HD-GR-14-10S-SS	14	22x1.5	10	18x1.5
			HD-GR-14-12S	HD-GR-14-12S-SS	14	22x1.5	12	20x1.5
		400	HD-GR-16-12S	HD-GR-16-12S-SS	16	24x1.5	12	20x1.5
			HD-GR-16-14S	HD-GR-16-14S-SS	16	24x1.5	14	22x1.5
			HD-GR-20-10S	HD-GR-20-10S-SS	20	30x2	10	18x1.5
			HD-GR-20-12S	HD-GR-20-12S-SS	20	30x2	12	20x1.5
			HD-GR-20-16S	HD-GR-20-16S-SS	20	30x2	16	24x1.5
			HD-GR-25-16S	HD-GR-25-16S-SS	25	36x2	16	24x1.5
			HD-GR-25-20S	HD-GR-25-20S-SS	25	36x2	20	30x2
			HD-GR-30-20S	HD-GR-30-20S-SS	30	42x2	20	30x2
			HD-GR-30-25S	HD-GR-30-25S-SS	30	42x2	25	36x2
		315	HD-GR-38-30S	HD-GR-38-30S-SS	38	52x2	38	42x2

**GR**

## HIGH PRESSURE - DIN 2353 connectors

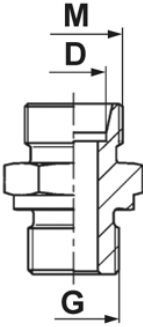
description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D1 [mm]	M1 [mm]	D2 [mm]	M2 [mm]
<p>Reducing connector</p>  <p><b>KORO-L</b></p>	L	315	HD-KORO-08-06L	HD-KORO-08-06L-SS	8	14x1.5	6	12x1.5
			HD-KORO-10-06L	HD-KORO-10-06L-SS	10	16x1.5	6	12x1.5
			HD-KORO-12-06L	HD-KORO-12-06L-SS	12	18x1.5	6	12x1.5
			HD-KORO-15-06L	HD-KORO-15-06L-SS	15	22x1.5	6	12x1.5
			HD-KORO-18-06L	HD-KORO-18-06L-SS	18	26x1.5	6	12x1.5
		160	HD-KORO-22-06L	HD-KORO-22-06L-SS	22	30x2	6	12x1.5
			HD-KORO-28-06L	HD-KORO-28-06L-SS	28	36x2	6	12x1.5
			HD-KORO-35-06L	HD-KORO-35-06L-SS	35	45x2	6	12x1.5
			HD-KORO-42-06L	HD-KORO-42-06L-SS	42	52x2	6	12x1.5
		315	HD-KORO-10-08L	HD-KORO-10-08L-SS	10	16x1.5	8	14x1.5
			HD-KORO-12-08L	HD-KORO-12-08L-SS	12	18x1.5	8	14x1.5
			HD-KORO-15-08L	HD-KORO-15-08L-SS	15	22x1.5	8	14x1.5
			HD-KORO-18-08L	HD-KORO-18-08L-SS	18	26x1.5	8	14x1.5
		160	HD-KORO-22-08L	HD-KORO-22-08L-SS	22	30x2	8	14x1.5
			HD-KORO-28-08L	HD-KORO-28-08L-SS	28	36x2	8	14x1.5
			HD-KORO-35-08L	HD-KORO-35-08L-SS	35	45x2	8	14x1.5
			HD-KORO-42-08L	HD-KORO-42-08L-SS	42	52x2	8	14x1.5
		315	HD-KORO-12-10L	HD-KORO-12-10L-SS	12	18x1.5	10	16x1.5
			HD-KORO-15-10L	HD-KORO-15-10L-SS	15	22x1.5	10	16x1.5
			HD-KORO-18-10L	HD-KORO-18-10L-SS	18	26x1.5	10	16x1.5
		160	HD-KORO-22-10L	HD-KORO-22-10L-SS	22	30x2	10	16x1.5
			HD-KORO-28-10L	HD-KORO-28-10L-SS	28	36x2	10	16x1.5
			HD-KORO-35-10L	HD-KORO-35-10L-SS	35	45x2	10	16x1.5
			HD-KORO-42-10L	HD-KORO-42-10L-SS	42	52x2	10	16x1.5
		315	HD-KORO-15-12L	HD-KORO-15-12L-SS	15	22x1.5	12	18x1.5
			HD-KORO-18-12L	HD-KORO-18-12L-SS	18	26x1.5	12	18x1.5
		160	HD-KORO-22-12L	HD-KORO-22-12L-SS	22	30x2	12	18x1.5
			HD-KORO-28-12L	HD-KORO-28-12L-SS	28	36x2	12	18x1.5
			HD-KORO-35-12L	HD-KORO-35-12L-SS	35	45x2	12	18x1.5
			HD-KORO-42-12L	HD-KORO-42-12L-SS	42	52x2	12	18x1.5
		315	HD-KORO-18-15L	HD-KORO-18-15L-SS	18	26x1.5	15	22x1.5
		160	HD-KORO-22-15L	HD-KORO-22-15L-SS	22	30x2	15	22x1.5
			HD-KORO-28-15L	HD-KORO-28-15L-SS	28	36x2	15	22x1.5
			HD-KORO-35-15L	HD-KORO-35-15L-SS	35	45x2	15	22x1.5
			HD-KORO-42-15L	HD-KORO-42-15L-SS	42	52x2	15	22x1.5
			HD-KORO-22-18L	HD-KORO-22-18L-SS	22	30x2	18	26x1.5
			HD-KORO-28-18L	HD-KORO-28-18L-SS	28	36x2	18	26x1.5
			HD-KORO-35-18L	HD-KORO-35-18L-SS	35	45x2	18	26x1.5
			HD-KORO-42-18L	HD-KORO-42-18L-SS	42	52x2	18	26x1.5
			HD-KORO-28-22L	HD-KORO-28-22L-SS	28	36x2	22	30x2
			HD-KORO-35-22L	HD-KORO-35-22L-SS	35	45x2	22	30x2
			HD-KORO-42-22L	HD-KORO-42-22L-SS	42	52x2	22	30x2
			HD-KORO-35-28L	HD-KORO-35-28L-SS	35	45x2	28	36x2
			HD-KORO-42-28L	HD-KORO-42-28L-SS	42	52x2	28	36x2
			HD-KORO-42-35L	HD-KORO-42-35L-SS	42	52x2	35	45x2

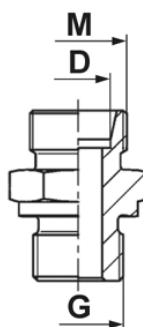
## HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D1 [mm]	M1 [mm]	D2 [mm]	M2 [mm]
 <p><b>KORO-S</b></p>	S	630	HD-KORO-08-06S	HD-KORO-08-06S-SS	8	16x1.5	6	14x1.5
			HD-KORO-10-06S	HD-KORO-10-06S-SS	10	18x1.5	6	14x1.5
			HD-KORO-12-06S	HD-KORO-12-06S-SS	12	20x1.5	6	14x1.5
			HD-KORO-14-06S	HD-KORO-14-06S-SS	14	22x1.5	6	14x1.5
		400	HD-KORO-16-06S	HD-KORO-16-06S-SS	16	24x1.5	6	14x1.5
			HD-KORO-20-06S	HD-KORO-20-06S-SS	20	30x2	6	14x1.5
			HD-KORO-25-06S	HD-KORO-25-06S-SS	25	36x2	6	14x1.5
			HD-KORO-30-06S	HD-KORO-30-06S-SS	30	42x2	6	14x1.5
		315	HD-KORO-38-06S	HD-KORO-38-06S-SS	38	52x2	6	14x1.5
		630	HD-KORO-10-08S	HD-KORO-10-08S-SS	10	18x1.5	8	16x1.5
			HD-KORO-12-08S	HD-KORO-12-08S-SS	12	20x1.5	8	16x1.5
			HD-KORO-14-08S	HD-KORO-14-08S-SS	14	22x1.5	8	16x1.5
		400	HD-KORO-16-08S	HD-KORO-16-08S-SS	16	24x1.5	8	16x1.5
			HD-KORO-20-08S	HD-KORO-20-08S-SS	20	30x2	8	16x1.5
			HD-KORO-25-08S	HD-KORO-25-08S-SS	25	36x2	8	16x1.5
			HD-KORO-30-08S	HD-KORO-30-08S-SS	30	42x2	8	16x1.5
		315	HD-KORO-38-08S	HD-KORO-38-08S-SS	38	52x2	8	16x1.5
		630	HD-KORO-12-10S	HD-KORO-12-10S-SS	12	20x1.5	10	18x1.5
			HD-KORO-14-10S	HD-KORO-14-10S-SS	14	22x1.5	10	18x1.5
		400	HD-KORO-16-10S	HD-KORO-16-10S-SS	16	24x1.5	10	18x1.5
			HD-KORO-20-10S	HD-KORO-20-10S-SS	20	30x2	10	18x1.5
			HD-KORO-25-10S	HD-KORO-25-10S-SS	25	36x2	10	18x1.5
		250	HD-KORO-30-10S	HD-KORO-30-10S-SS	30	42x2	10	18x1.5
			HD-KORO-38-10S	HD-KORO-38-10S-SS	38	52x2	10	18x1.5
		630	HD-KORO-14-12S	HD-KORO-14-12S-SS	14	22x1.5	12	20x1.5
		400	HD-KORO-16-12S	HD-KORO-16-12S-SS	16	24x1.5	12	20x1.5
			HD-KORO-20-12S	HD-KORO-20-12S-SS	20	30x2	12	20x1.5
			HD-KORO-25-12S	HD-KORO-25-12S-SS	25	36x2	12	20x1.5
			HD-KORO-30-12S	HD-KORO-30-12S-SS	30	42x2	12	20x1.5
		315	HD-KORO-38-12S	HD-KORO-38-12S-SS	38	52x2	12	20x1.5
		400	HD-KORO-16-14S	HD-KORO-16-14S-SS	16	24x1.5	14	22x1.5
			HD-KORO-20-14S	HD-KORO-20-14S-SS	20	30x2	14	22x1.5
			HD-KORO-25-14S	HD-KORO-25-14S-SS	25	36x2	14	22x1.5
		250	HD-KORO-30-14S	HD-KORO-30-14S-SS	30	42x2	14	22x1.5
			HD-KORO-38-14S	HD-KORO-38-14S-SS	38	52x2	14	22x1.5
		400	HD-KORO-20-16S	HD-KORO-20-16S-SS	20	30x2	16	24x1.5
			HD-KORO-25-16S	HD-KORO-25-16S-SS	25	36x2	16	24x1.5
			HD-KORO-30-16S	HD-KORO-30-16S-SS	30	42x2	16	24x1.5
		315	HD-KORO-38-16S	HD-KORO-38-16S-SS	38	52x2	16	24x1.5
		400	HD-KORO-25-20S	HD-KORO-25-20S-SS	25	36x2	20	30x2
			HD-KORO-30-20S	HD-KORO-30-20S-SS	30	42x2	20	30x2
			HD-KORO-38-20S	HD-KORO-38-20S-SS	38	52x2	20	30x2
			HD-KORO-30-25S	HD-KORO-30-25S-SS	30	42x2	25	36x2
		315	HD-KORO-38-25S	HD-KORO-38-25S-SS	38	52x2	25	36x2
			HD-KORO-38-30S	HD-KORO-38-30S-SS	38	52x2	30	42x2

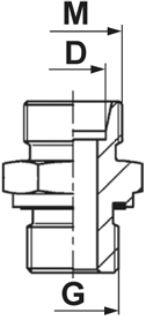


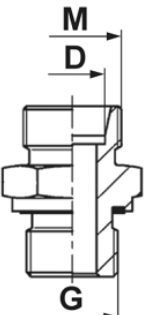
## HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [BSP]
Connector with BSP thread, DIN 3852-B seal   <b>GE-BB</b>	L	315	HD-GE-06L-BB-02	HD-GE-06L-BB-02-SS	6	12x1.5	1/8
			HD-GE-08L-BB-04	HD-GE-08L-BB-04-SS	8	14x1.5	1/4
			HD-GE-10L-BB-04	HD-GE-10L-BB-04-SS	10	16x1.5	1/4
			HD-GE-12L-BB-06	HD-GE-12L-BB-06-SS	12	18x1.5	3/8
			HD-GE-15L-BB-08	HD-GE-15L-BB-08-SS	15	22x1.5	1/2
			HD-GE-18L-BB-08	HD-GE-18L-BB-08-SS	18	26x1.5	1/2
		160	HD-GE-22L-BB-12	HD-GE-22L-BB-12-SS	22	30x2	3/4
			HD-GE-28L-BB-16	HD-GE-28L-BB-16-SS	28	36x2	1
			HD-GE-35L-BB-20	HD-GE-35L-BB-20-SS	35	45x2	1.1/4
			HD-GE-42L-BB-24	HD-GE-42L-BB-24-SS	42	52x2	1.1/2
	S	630	HD-GE-06S-BB-04	HD-GE-06S-BB-04-SS	6	14x1.5	1/4
			HD-GE-08S-BB-04	HD-GE-08S-BB-04-SS	8	16x1.5	1/4
			HD-GE-10S-BB-06	HD-GE-10S-BB-06-SS	10	18x1.5	3/8
			HD-GE-12S-BB-06	HD-GE-12S-BB-06-SS	12	20x1.5	3/8
			HD-GE-14S-BB-08	HD-GE-14S-BB-08-SS	14	22x1.5	1/2
		400	HD-GE-16S-BB-08	HD-GE-16S-BB-08-SS	16	24x1.5	1/2
			HD-GE-20S-BB-12	HD-GE-20S-BB-12-SS	20	30x2	3/4
			HD-GE-25S-BB-16	HD-GE-25S-BB-16-SS	25	36x2	1
			HD-GE-30S-BB-20	HD-GE-30S-BB-20-SS	30	42x2	1.1/4
		315	HD-GE-38S-BB-24	HD-GE-38S-BB-24-SS	38	52x2	1.1/2

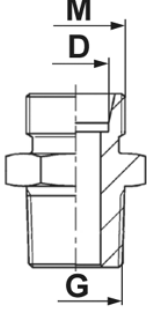
description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [mm]
Connector with metric thread, DIN 3852-B seal   <b>GE-MB</b>	L	315	HD-GE-06L-MB-10	HD-GE-06L-MB-10-SS	6	12x1.5	10x1
			HD-GE-08L-MB-12	HD-GE-08L-MB-12-SS	8	14x1.5	12x1.5
			HD-GE-10L-MB-14	HD-GE-10L-MB-14-SS	10	16x1.5	14x1.5
			HD-GE-12L-MB-16	HD-GE-12L-MB-16-SS	12	18x1.5	16x1.5
			HD-GE-15L-MB-18	HD-GE-15L-MB-18-SS	15	22x1.5	18x1.5
			HD-GE-18L-MB-22	HD-GE-18L-MB-22-SS	18	26x1.5	22x1.5
		160	HD-GE-22L-MB-26	HD-GE-22L-MB-26-SS	22	30x2	26x1.5
			HD-GE-28L-MB-33	HD-GE-28L-MB-33-SS	28	36x2	33x2
			HD-GE-35L-MB-42	HD-GE-35L-MB-42-SS	35	45x2	42x2
			HD-GE-42L-MB-48	HD-GE-42L-MB-48-SS	42	52x2	48x2
	S	630	HD-GE-06S-MB-12	HD-GE-06S-MB-12-SS	6	14x1.5	12x1.5
			HD-GE-08S-MB-14	HD-GE-08S-MB-14-SS	8	16x1.5	14x1.5
			HD-GE-10S-MB-16	HD-GE-10S-MB-16-SS	10	18x1.5	16x1.5
			HD-GE-12S-MB-18	HD-GE-12S-MB-18-SS	12	20x1.5	18x1.5
			HD-GE-14S-MB-20	HD-GE-14S-MB-20-SS	14	22x1.5	20x1.5
		400	HD-GE-16S-MB-22	HD-GE-16S-MB-22-SS	16	24x1.5	22x1.5
			HD-GE-20S-MB-27	HD-GE-20S-MB-27-SS	20	30x2	27x2
			HD-GE-25S-MB-33	HD-GE-25S-MB-33-SS	25	36x2	33x2
			HD-GE-30S-MB-42	HD-GE-30S-MB-42-SS	30	42x2	42x2
		315	HD-GE-38S-MB-48	HD-GE-38S-MB-48-SS	38	52x2	48x2

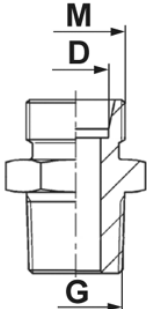
## HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [BSP]
Connector with BSP thread, DIN 3852-E seal    <b>GE-BE</b>	LL	100	HD-GE-04LL-BE-02	HD-GE-04LL-BE-02-SS	4	8x1	1/8
			HD-GE-06LL-BE-02	HD-GE-06LL-BE-02-SS	6	10x1	1/8
			HD-GE-08LL-BE-02	HD-GE-08LL-BE-02-SS	8	12x1	1/8
	L	315	HD-GE-06L-BE-02	HD-GE-06L-BE-02-SS	6	2x1.5	1/8
			HD-GE-08L-BE-04	HD-GE-08L-BE-04-SS	8	14x1.5	1/4
			HD-GE-10L-BE-04	HD-GE-10L-BE-04-SS	10	16x1.5	1/4
			HD-GE-12L-BE-06	HD-GE-12L-BE-06-SS	12	18x1.5	3/8
			HD-GE-15L-BE-08	HD-GE-15L-BE-08-SS	15	22x1.5	1/2
			HD-GE-18L-BE-08	HD-GE-18L-BE-08-SS	18	26x1.5	1/2
		160	HD-GE-22L-BE-12	HD-GE-22L-BE-12-SS	22	30x2	3/4
			HD-GE-28L-BE-16	HD-GE-28L-BE-16-SS	28	36x2	1
			HD-GE-35L-BE-20	HD-GE-35L-BE-20-SS	35	45x2	1.1/4
			HD-GE-42L-BE-24	HD-GE-42L-BE-24-SS	42	52x2	1.1/2
	S	630	HD-GE-06S-BE-04	HD-GE-06S-BE-04-SS	6	14x1.5	1/4
			HD-GE-08S-BE-04	HD-GE-08S-BE-04-SS	8	16x1.5	1/4
			HD-GE-10S-BE-06	HD-GE-10S-BE-06-SS	10	18x1.5	3/8
			HD-GE-12S-BE-06	HD-GE-12S-BE-06-SS	12	20x1.5	3/8
			HD-GE-14S-BE-08	HD-GE-14S-BE-08-SS	14	22x1.5	1/2
			HD-GE-16S-BE-08	HD-GE-16S-BE-08-SS	16	24x1.5	1/2
		400	HD-GE-20S-BE-12	HD-GE-20S-BE-12-SS	20	30x2	3/4
			HD-GE-25S-BE-16	HD-GE-25S-BE-16-SS	25	36x2	1
			HD-GE-30S-BE-20	HD-GE-30S-BE-20-SS	30	42x2	1.1/4
			HD-GE-38S-BE-24	HD-GE-38S-BE-24-SS	38	52x2	1.1/2

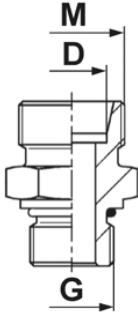
description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [mm]
Connector with metric thread, DIN 3852-E seal    <b>GE-ME</b>	LL	100	HD-GE-04LL-ME-08	HD-GE-04LL-ME-08-SS	4	8x1	8x1
			HD-GE-06LL-ME-10	HD-GE-06LL-ME-10-SS	6	10x1	10x1
			HD-GE-08LL-ME-10	HD-GE-08LL-ME-10-SS	8	12x1	10x1
	L	315	HD-GE-06L-ME-10	HD-GE-06L-ME-10-SS	6	12x1.5	10x1
			HD-GE-08L-ME-12	HD-GE-08L-ME-12-SS	8	14x1.5	12x1.5
			HD-GE-10L-ME-14	HD-GE-10L-ME-14-SS	10	16x1.5	14x1.5
			HD-GE-12L-ME-16	HD-GE-12L-ME-16-SS	12	18x1.5	16x1.5
			HD-GE-15L-ME-18	HD-GE-15L-ME-18-SS	15	22x1.5	18x1.5
			HD-GE-18L-ME-22	HD-GE-18L-ME-22-SS	18	26x1.5	22x1.5
		160	HD-GE-22L-ME-26	HD-GE-22L-ME-26-SS	22	30x2	26x1.5
			HD-GE-28L-ME-33	HD-GE-28L-ME-33-SS	28	36x2	33x2
			HD-GE-35L-ME-42	HD-GE-35L-ME-42-SS	35	45x2	42x2
			HD-GE-42L-ME-48	HD-GE-42L-ME-48-SS	42	52x2	48x2
	S	630	HD-GE-06S-ME-12	HD-GE-06S-ME-12-SS	6	14x1.5	12x1.5
			HD-GE-08S-ME-14	HD-GE-08S-ME-14-SS	8	16x1.5	14x1.5
			HD-GE-10S-ME-16	HD-GE-10S-ME-16-SS	10	18x1.5	16x1.5
			HD-GE-12S-ME-18	HD-GE-12S-ME-18-SS	12	20x1.5	18x1.5
			HD-GE-14S-ME-20	HD-GE-14S-ME-20-SS	14	22x1.5	20x1.5
			HD-GE-16S-ME-22	HD-GE-16S-ME-22-SS	16	24x1.5	22x1.5
		400	HD-GE-20S-ME-27	HD-GE-20S-ME-27-SS	20	30x2	27x2
			HD-GE-25S-ME-33	HD-GE-25S-ME-33-SS	25	36x2	33x2
			HD-GE-30S-ME-42	HD-GE-30S-ME-42-SS	30	42x2	42x2
			HD-GE-38S-ME-48	HD-GE-38S-ME-48-SS	38	52x2	48x2

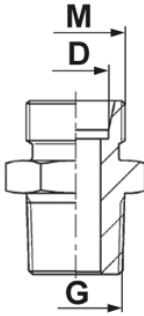
## HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [BSPT]
Connector with BSPT tapered thread    <b>GE-BT</b>	L	315	HD-GE-06L-BT-02	HD-GE-06L-BT-02-SS	6	12x1.5	1/8
			HD-GE-08L-BT-04	HD-GE-08L-BT-04-SS	8	14x1.5	1/4
			HD-GE-10L-BT-04	HD-GE-10L-BT-04-SS	10	16x1.5	1/4
			HD-GE-12L-BT-06	HD-GE-12L-BT-06-SS	12	18x1.5	3/8
			HD-GE-15L-BT-08	HD-GE-15L-BT-08-SS	15	22x1.5	1/2
			HD-GE-18L-BT-08	HD-GE-18L-BT-08-SS	18	26x1.5	1/2
		160	HD-GE-22L-BT-12	HD-GE-22L-BT-12-SS	22	30x2	3/4
			HD-GE-28L-BT-16	HD-GE-28L-BT-16-SS	28	36x2	1
			HD-GE-35L-BT-20	HD-GE-35L-BT-20-SS	35	45x2	1.1/4
			HD-GE-42L-BT-24	HD-GE-42L-BT-24-SS	42	52x2	1.1/2
	S	630	HD-GE-06S-BT-04	HD-GE-06S-BT-04-SS	6	14x1.5	1/4
			HD-GE-08S-BT-04	HD-GE-08S-BT-04-SS	8	16x1.5	1/4
			HD-GE-10S-BT-06	HD-GE-10S-BT-06-SS	10	18x1.5	3/8
			HD-GE-12S-BT-06	HD-GE-12S-BT-06-SS	12	20x1.5	3/8
			HD-GE-14S-BT-08	HD-GE-14S-BT-08-SS	14	22x1.5	1/2
		400	HD-GE-16S-BT-08	HD-GE-16S-BT-08-SS	16	24x1.5	1/2
			HD-GE-20S-BT-12	HD-GE-20S-BT-12-SS	20	30x2	3/4
			HD-GE-25S-BT-16	HD-GE-25S-BT-16-SS	25	36x2	1
			HD-GE-30S-BT-20	HD-GE-30S-BT-20-SS	30	42x2	1.1/4
		315	HD-GE-38S-BT-24	HD-GE-38S-BT-24-SS	38	52x2	1.1/2

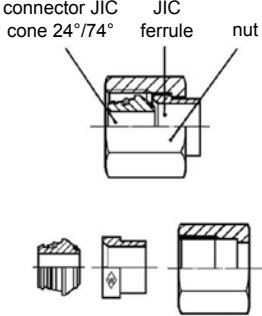
description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [NPT]
Connector with NPT tapered thread    <b>GE-NT</b>	L	315	HD-GE-06L-NT-02	HD-GE-06L-NT-02-SS	6	12x1.5	1/8
			HD-GE-08L-NT-04	HD-GE-08L-NT-04-SS	8	14x1.5	1/4
			HD-GE-10L-NT-04	HD-GE-10L-NT-04-SS	10	16x1.5	1/4
			HD-GE-12L-NT-06	HD-GE-12L-NT-06-SS	12	18x1.5	3/8
			HD-GE-15L-NT-08	HD-GE-15L-NT-08-SS	15	22x1.5	1/2
			HD-GE-18L-NT-08	HD-GE-18L-NT-08-SS	18	26x1.5	1/2
		160	HD-GE-22L-NT-12	HD-GE-22L-NT-12-SS	22	30x2	3/4
			HD-GE-28L-NT-16	HD-GE-28L-NT-16-SS	28	36x2	1
			HD-GE-35L-NT-20	HD-GE-35L-NT-20-SS	35	45x2	1.1/4
			HD-GE-42L-NT-24	HD-GE-42L-NT-24-SS	42	52x2	1.1/2
	S	630	HD-GE-06S-NT-04	HD-GE-06S-NT-04-SS	6	14x1.5	1/4
			HD-GE-08S-NT-04	HD-GE-08S-NT-04-SS	8	16x1.5	1/4
			HD-GE-10S-NT-06	HD-GE-10S-NT-06-SS	10	18x1.5	3/8
			HD-GE-12S-NT-06	HD-GE-12S-NT-06-SS	12	20x1.5	3/8
			HD-GE-14S-NT-08	HD-GE-14S-NT-08-SS	14	22x1.5	1/2
		400	HD-GE-16S-NT-08	HD-GE-16S-NT-08-SS	16	24x1.5	1/2
			HD-GE-20S-NT-12	HD-GE-20S-NT-12-SS	20	30x2	3/4
			HD-GE-25S-NT-16	HD-GE-25S-NT-16-SS	25	36x2	1
			HD-GE-30S-NT-20	HD-GE-30S-NT-20-SS	30	42x2	1.1/4
		315	HD-GE-38S-NT-24	HD-GE-38S-NT-24-SS	38	52x2	1.1/2

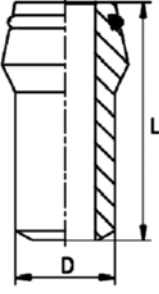
## HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [UN-UNF]
Connector with UN-UNF thread, O-ring seal   <b>GE-UN</b>	L	315	HD-GE-06L-UN-07	HD-GE-06L-UN-07-SS	6	12x1.5	7/16-20
			HD-GE-08L-UN-08	HD-GE-08L-UN-08-SS	8	14x1.5	1/2-20
			HD-GE-10L-UN-08	HD-GE-10L-UN-08-SS	10	16x1.5	1/2-20
			HD-GE-12L-UN-09	HD-GE-12L-UN-09-SS	12	18x1.5	9/16-18
			HD-GE-15L-UN-12	HD-GE-15L-UN-12-SS	15	22x1.5	3/4-16
			HD-GE-18L-UN-12	HD-GE-18L-UN-12-SS	18	26x1.5	3/4-16
		160	HD-GE-22L-UN-17	HD-GE-22L-UN-17-SS	22	30x2	1.1/16-12
			HD-GE-28L-UN-21	HD-GE-28L-UN-21-SS	28	36x2	1.5/16-12
			HD-GE-35L-UN-26	HD-GE-35L-UN-26-SS	35	45x2	1.5/8-12
			HD-GE-42L-UN-30	HD-GE-42L-UN-30-SS	42	52x2	1.7/8-12
	S	630	HD-GE-06S-UN-08	HD-GE-06S-UN-08-SS	6	14x1.5	1/2-20
			HD-GE-08S-UN-08	HD-GE-08S-UN-08-SS	8	16x1.5	1/2-20
			HD-GE-10S-UN-09	HD-GE-10S-UN-09-SS	10	18x1.5	9/16-18
			HD-GE-12S-UN-09	HD-GE-12S-UN-09-SS	12	20x1.5	9/16-18
			HD-GE-14S-UN-12	HD-GE-14S-UN-12-SS	14	22x1.5	3/4-16
			HD-GE-16S-UN-12	HD-GE-16S-UN-12-SS	16	24x1.5	3/4-16
		400	HD-GE-20S-UN-17	HD-GE-20S-UN-17-SS	20	30x2	1.1/16-12
			HD-GE-25S-UN-21	HD-GE-25S-UN-21-SS	25	36x2	1.5/16-12
			HD-GE-30S-UN-26	HD-GE-30S-UN-26-SS	30	42x2	1.5/8-12
			HD-GE-38S-UN-30	HD-GE-38S-UN-30-SS	38	52x2	1.7/8-12

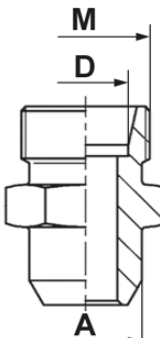
description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [mm]
Connector with metric ta- pered thread   <b>GE-MT</b>	L	315	HD-GE-06L-MT-10	HD-GE-06L-MT-10-SS	6	12x1.5	10x1
			HD-GE-08L-MT-12	HD-GE-08L-MT-12-SS	8	14x1.5	12x1.5
			HD-GE-10L-MT-14	HD-GE-10L-MT-14-SS	10	16x1.5	14x1.5
			HD-GE-12L-MT-16	HD-GE-12L-MT-16-SS	12	18x1.5	16x1.5
			HD-GE-15L-MT-18	HD-GE-15L-MT-18-SS	15	22x1.5	18x1.5
			HD-GE-18L-MT-22	HD-GE-18L-MT-22-SS	18	26x1.5	22x1.5
	M	630	HD-GE-06S-MT-12	HD-GE-06S-MT-12-SS	6	14x1.5	12x1.5
			HD-GE-08S-MT-14	HD-GE-08S-MT-14-SS	8	16x1.5	14x1.5
			HD-GE-10S-MT-16	HD-GE-10S-MT-16-SS	10	18x1.5	16x1.5
			HD-GE-12S-MT-18	HD-GE-12S-MT-18-SS	12	20x1.5	18x1.5
			HD-GE-14S-MT-20	HD-GE-14S-MT-20-SS	14	22x1.5	20x1.5
		400	HD-GE-16S-MT-22	HD-GE-16S-MT-22-SS	16	24x1.5	22x1.5

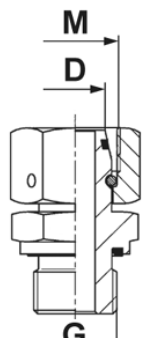
## HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (AISI 316)	D [mm]	M [mm]
DIN2353/JIC connector + nut with metric thread + JIC ferrule O-ring seal   <b>HJ</b>	L	500	HD-HJ-06L-SS	6	12x1.5
			HD-HJ-08L-SS	8	14x1.5
			HD-HJ-10L-SS	10	16x1.5
		400	HD-HJ-12L-SS	12	18x1.5
			HD-HJ-15L-SS	15	22x1.5
			HD-HJ-18L-SS	18	26x1.5
		250	HD-HJ-22L-SS	22	30x2
			HD-HJ-28L-SS	28	36x2
			HD-HJ-35L-SS	35	45x2
	S	630	HD-HJ-42L-SS	42	52x2
			HD-HJ-06S-SS	6	14x1.5
			HD-HJ-08S-SS	8	16x1.5
			HD-HJ-10S-SS	10	18x1.5
			HD-HJ-12S-SS	12	20x1.5
			HD-HJ-16S-SS	16	24x1.5
		400	HD-HJ-20S-SS	20	30x2
			HD-HJ-25S-SS	25	36x2
			HD-HJ-30S-SS	30	42x2
			HD-HJ-38S-SS	38	52x2

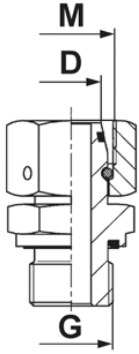
description	series	press. [bar]	code (black steel)	code (AISI 316)	D [mm]	g [mm]	L [mm]
Connector with weld-in end. 24° cone. O-ring seal   <b>ASF</b>	L/S	520	HD-ASF-06X1.75	-	6	1.75	31
			-	HD-ASF-06X1.5-SS	6	1.5	31
			HD-ASF-08X2.0	HD-ASF-08X2.0-SS	8	2.0	31
		315	HD-ASF-10X1.5	HD-ASF-10X1.5-SS	10	1.5	32.5
		400	HD-ASF-10X2.0	HD-ASF-10X2.0-SS	10	2.0	32.5
		315	HD-ASF-12X1.5	HD-ASF-12X1.5-SS	12	1.5	32.5
		400	HD-ASF-12X2.0	HD-ASF-12X2.0-SS	12	2.0	32.5
	L	470	HD-ASF-12X2.5	HD-ASF-12X2.5-SS	12	2.5	32.5
		315	HD-ASF-15X2.5	HD-ASF-15X2.5-SS	15	2.5	34
			HD-ASF-18X2.5	HD-ASF-18X2.5-SS	18	2.5	35.5
		160	HD-ASF-22X2.5	HD-ASF-22X2.5-SS	22	2.5	38.5
			HD-ASF-28X2.5	HD-ASF-28X2.5-SS	28	2.5	41.5
			HD-ASF-35X3.0	HD-ASF-35X3.0-SS	35	3.0	47.5
			HD-ASF-42X3.0	HD-ASF-42X3.0-SS	42	3.0	47.5
	S	400	HD-ASF-14X3.0	HD-ASF-14X3.0-SS	14	3.0	38.5
		250	HD-ASF-16X2.0	HD-ASF-16X2.0-SS	16	2.0	39
		315	HD-ASF-16X2.5	HD-ASF-16X2.5-SS	16	2.5	39
		400	HD-ASF-16X3.0	HD-ASF-16X3.0-SS	16	3.0	39
		250	HD-ASF-20X2.5	HD-ASF-20X2.5-SS	20	2.5	45
		315	HD-ASF-20X3.0	HD-ASF-20X3.0-SS	20	3.0	45
		400	HD-ASF-20X4.0	HD-ASF-20X4.0-SS	20	4.0	45
		250	HD-ASF-25X3.0	HD-ASF-25X3.0-SS	25	3.0	49.5
		315	HD-ASF-25X4.0	HD-ASF-25X4.0-SS	25	4.0	49.5
		400	HD-ASF-25X5.0	HD-ASF-25X5.0-SS	25	5.0	49.5
		160	HD-ASF-30X3.0	HD-ASF-30X3.0-SS	30	3.0	52
		250	HD-ASF-30X4.0	HD-ASF-30X4.0-SS	30	4.0	52
		315	HD-ASF-30X5.0	HD-ASF-30X5.0-SS	30	5.0	52
			HD-ASF-30X6.0	HD-ASF-30X6.0-SS	30	6.0	52
		250	HD-ASF-38X5.0	HD-ASF-38X5.0-SS	38	5.0	56.5
		315	HD-ASF-38X6.0	HD-ASF-38X6.0-SS	38	6.0	56.5

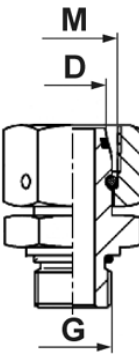
## HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (black steel)	code (AISI 316)	D [mm]	M [mm]	A [mm]
Connector with weld-in end    <b>AS</b>	L	315	HD-AS-06L	HD-AS-06L-SS	6	12x1.5	10
			HD-AS-08L	HD-AS-08L-SS	8	14x1.5	12
			HD-AS-10L	HD-AS-10L-SS	10	16x1.5	14
			HD-AS-12L	HD-AS-12L-SS	12	18x1.5	16
			HD-AS-15L	HD-AS-15L-SS	15	22x1.5	19
			HD-AS-18L	HD-AS-18L-SS	18	26x1.5	22
		160	HD-AS-22L	HD-AS-22L-SS	22	30x2	27
			HD-AS-28L	HD-AS-28L-SS	28	36x2	32
			HD-AS-35L	HD-AS-35L-SS	35	45x2	40
			HD-AS-42L	HD-AS-42L-SS	42	52x2	46
	S	630	HD-AS-06S	HD-AS-06S-SS	6	14x1.5	11
			HD-AS-08S	HD-AS-08S-SS	8	16x1.5	13
			HD-AS-10S	HD-AS-10S-SS	10	18x1.5	15
			HD-AS-12S	HD-AS-12S-SS	12	20x1.5	17
			HD-AS-14S	HD-AS-14S-SS	14	22x1.5	19
		400	HD-AS-16S	HD-AS-16S-SS	16	24x1.5	21
			HD-AS-20S	HD-AS-20S-SS	20	30x2	26
			HD-AS-25S	HD-AS-25S-SS	25	36x2	31
			HD-AS-30S	HD-AS-30S-SS	30	42x2	36
		315	HD-AS-38S	HD-AS-38S-SS	38	52x2	44


description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [BSP]
Adjustable metric connector with BSP thread, DIN 3852-E seal    <b>EVGEO - BE</b>	L	315	HD-EVGEO-06L-BE-02	HD-EVGEO-06L-BE-02-SS	6	12x1.5	1/8
			HD-EVGEO-08L-BE-04	HD-EVGEO-08L-BE-04-SS	8	14x1.5	1/4
			HD-EVGEO-10L-BE-04	HD-EVGEO-10L-BE-04-SS	10	16x1.5	1/4
			HD-EVGEO-12L-BE-06	HD-EVGEO-12L-BE-06-SS	12	18x1.5	3/8
			HD-EVGEO-15L-BE-08	HD-EVGEO-15L-BE-08-SS	15	22x1.5	1/2
			HD-EVGEO-18L-BE-08	HD-EVGEO-18L-BE-08-SS	18	26x1.5	1/2
		160	HD-EVGEO-22L-BE-12	HD-EVGEO-22L-BE-12-SS	22	30x2	3/4
			HD-EVGEO-28L-BE-16	HD-EVGEO-28L-BE-16-SS	28	36x2	1
			HD-EVGEO-35L-BE-20	HD-EVGEO-35L-BE-20-SS	35	45x2	1.1/4
			HD-EVGEO-42L-BE-24	HD-EVGEO-42L-BE-24-SS	42	52x2	1.1/2
	S	630	HD-EVGEO-06S-BE-04	HD-EVGEO-06S-BE-04-SS	6	14x1.5	1/4
			HD-EVGEO-08S-BE-04	HD-EVGEO-08S-BE-04-SS	8	16x1.5	1/4
			HD-EVGEO-10S-BE-06	HD-EVGEO-10S-BE-06-SS	10	18x1.5	3/8
			HD-EVGEO-12S-BE-06	HD-EVGEO-12S-BE-06-SS	12	20x1.5	3/8
			HD-EVGEO-14S-BE-08	HD-EVGEO-14S-BE-08-SS	14	22x1.5	1/2
		400	HD-EVGEO-16S-BE-08	HD-EVGEO-16S-BE-08-SS	16	24x1.5	1/2
			HD-EVGEO-20S-BE-12	HD-EVGEO-20S-BE-12-SS	20	30x2	3/4
			HD-EVGEO-25S-BE-16	HD-EVGEO-25S-BE-16-SS	25	36x2	1
			HD-EVGEO-30S-BE-20	HD-EVGEO-30S-BE-20-SS	30	42x2	1.1/4
		315	HD-EVGEO-38S-BE-24	HD-EVGEO-38S-BE-24-SS	38	52x2	1.1/2


## HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [mm]
Adjustable connector with metric thread, DIN 3852-E seal   <b>EVGEO - ME</b>	L	315	HD-EVGEO-06L-ME-10	HD-EVGEO-06L-ME-10-SS	6	12x1.5	10x1
			HD-EVGEO-08L-ME-12	HD-EVGEO-08L-ME-12-SS	8	14x1.5	12x1.5
			HD-EVGEO-10L-ME-14	HD-EVGEO-10L-ME-14-SS	10	16x1.5	14x1.5
			HD-EVGEO-12L-ME-16	HD-EVGEO-12L-ME-16-SS	12	18x1.5	16x1.5
			HD-EVGEO-15L-ME-18	HD-EVGEO-15L-ME-18-SS	15	22x1.5	18x1.5
			HD-EVGEO-18L-ME-22	HD-EVGEO-18L-ME-22-SS	18	26x1.5	22x1.5
		160	HD-EVGEO-22L-ME-26	HD-EVGEO-22L-ME-26-SS	22	30x2	26x1.5
			HD-EVGEO-28L-ME-33	HD-EVGEO-28L-ME-33-SS	28	36x2	33x2
			HD-EVGEO-35L-ME-42	HD-EVGEO-35L-ME-42-SS	35	45x2	42x2
			HD-EVGEO-42L-ME-48	HD-EVGEO-42L-ME-48-SS	42	52x2	48x2
	S	630	HD-EVGEO-06S-ME-12	HD-EVGEO-06S-ME-12-SS	6	14x1.5	12x1.5
			HD-EVGEO-08S-ME-14	HD-EVGEO-08S-ME-14-SS	8	16x1.5	14x1.5
			HD-EVGEO-10S-ME-16	HD-EVGEO-10S-ME-16-SS	10	18x1.5	16x1.5
			HD-EVGEO-12S-ME-18	HD-EVGEO-12S-ME-18-SS	12	20x1.5	18x1.5
			HD-EVGEO-14S-ME-20	HD-EVGEO-14S-ME-20-SS	14	22x1.5	20x1.5
		400	HD-EVGEO-16S-ME-22	HD-EVGEO-16S-ME-22-SS	16	24x1.5	22x1.5
			HD-EVGEO-20S-ME-27	HD-EVGEO-20S-ME-27-SS	20	30x2	27x2
			HD-EVGEO-25S-ME-33	HD-EVGEO-25S-ME-33-SS	25	36x2	33x2
			HD-EVGEO-30S-ME-42	HD-EVGEO-30S-ME-42-SS	30	42x2	42x2
		315	HD-EVGEO-38S-ME-48	HD-EVGEO-38S-ME-48-SS	38	52x2	48x2

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [UN-UNF]
Adjustable connector with UN-UNF thread, O-ring seal   <b>EVGEO - UN</b>	L	315	HD-EVGEO-06L-UN-07	HD-EVGEO-06L-UN-07-SS	6	12x1.5	7/16-20
			HD-EVGEO-08L-UN-07	HD-EVGEO-08L-UN-07-SS	8	14x1.5	7/16-20
			HD-EVGEO-10L-UN-09	HD-EVGEO-10L-UN-09-SS	10	16x1.5	9/16-18
			HD-EVGEO-12L-UN-12	HD-EVGEO-12L-UN-12-SS	12	18x1.5	3/4-16
			HD-EVGEO-15L-UN-14	HD-EVGEO-15L-UN-14-SS	15	22x1.5	7/8-14
			HD-EVGEO-18L-UN-14	HD-EVGEO-18L-UN-14-SS	18	26x1.5	7/8-14
		160	HD-EVGEO-22L-UN-17	HD-EVGEO-22L-UN-17-SS	22	30x2	1.1/16-12
			HD-EVGEO-28L-UN-21	HD-EVGEO-28L-UN-21-SS	28	36x2	1.5/16-12
			HD-EVGEO-35L-UN-26	HD-EVGEO-35L-UN-26-SS	35	45x2	1.5/8-12
			HD-EVGEO-42L-UN-30	HD-EVGEO-42L-UN-30-SS	42	52x2	1.7/8-12
	S	630	HD-EVGEO-06S-UN-07	HD-EVGEO-06S-UN-07-SS	6	14x1.5	7/16-20
			HD-EVGEO-08S-UN-09	HD-EVGEO-08S-UN-09-SS	8	16x1.5	9/16-18
			HD-EVGEO-10S-UN-09	HD-EVGEO-10S-UN-09-SS	10	18x1.5	9/16-18
			HD-EVGEO-12S-UN-12	HD-EVGEO-12S-UN-12-SS	12	20x1.5	3/4-16
			HD-EVGEO-14S-UN-14	HD-EVGEO-14S-UN-14-SS	14	22x1.5	7/8-14
		400	HD-EVGEO-16S-UN-14	HD-EVGEO-16S-UN-14-SS	16	24x1.5	7/8-14
			HD-EVGEO-20S-UN-17	HD-EVGEO-20S-UN-17-SS	20	30x2	1.1/16-12
			HD-EVGEO-25S-UN-21	HD-EVGEO-25S-UN-21-SS	25	36x2	1.5/16-12
			HD-EVGEO-30S-UN-26	HD-EVGEO-30S-UN-26-SS	30	42x2	1.5/8-12
		315	HD-EVGEO-38S-UN-30	HD-EVGEO-38S-UN-30-SS	38	52x2	1.7/8-12

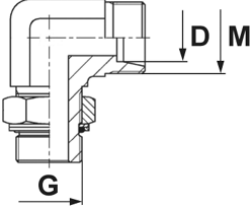
## HIGH PRESSURE - DIN 2353 connectors

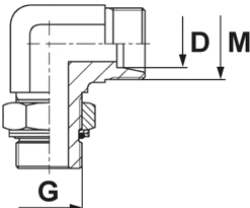
description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [BSP]
Connector with BSP fe- male thread   <b>GAI - B</b>	L	315	HD-GAI-06L-B-02	HD-GAI-06L-B-02-SS	6	12x1.5	1/8
			HD-GAI-08L-B-04	HD-GAI-08L-B-04-SS	8	14x1.5	1/4
			HD-GAI-10L-B-04	HD-GAI-10L-B-04-SS	10	16x1.5	1/4
			HD-GAI-12L-B-06	HD-GAI-12L-B-06-SS	12	18x1.5	3/8
			HD-GAI-15L-B-08	HD-GAI-15L-B-08-SS	15	22x1.5	1/2
			HD-GAI-18L-B-08	HD-GAI-18L-B-08-SS	18	26x1.5	1/2
		160	HD-GAI-22L-B-12	HD-GAI-22L-B-12-SS	22	30x2	3/4
			HD-GAI-28L-B-16	HD-GAI-28L-B-16-SS	28	36x2	1
			HD-GAI-35L-B-20	HD-GAI-35L-B-20-SS	35	45x2	1.1/4
			HD-GAI-42L-B-24	HD-GAI-42L-B-24-SS	42	52x2	1.1/2
	S	630	HD-GAI-06S-B-04	HD-GAI-06S-B-04-SS	6	14x1.5	1/4
			HD-GAI-08S-B-04	HD-GAI-08S-B-04-SS	8	16x1.5	1/4
			HD-GAI-10S-B-06	HD-GAI-10S-B-06-SS	10	18x1.5	3/8
			HD-GAI-12S-B-06	HD-GAI-12S-B-06-SS	12	20x1.5	3/8
			HD-GAI-14S-B-08	HD-GAI-14S-B-08-SS	14	22x1.5	1/2
			HD-GAI-16S-B-08	HD-GAI-16S-B-08-SS	16	24x1.5	1/2
		400	HD-GAI-20S-B-12	HD-GAI-20S-B-12-SS	20	30x2	3/4
			HD-GAI-25S-B-16	HD-GAI-25S-B-16-SS	25	36x2	1
			HD-GAI-30S-B-20	HD-GAI-30S-B-20-SS	30	42x2	1.1/4
			HD-GAI-38S-B-24	HD-GAI-38S-B-24-SS	38	52x2	1.1/2

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [mm]
Connector with metric female thread   <b>GAI - M</b>	L	315	HD-GAI-06L-M-10	HD-GAI-06L-M-10-SS	6	12x1.5	10x1
			HD-GAI-08L-M-12	HD-GAI-08L-M-12-SS	8	14x1.5	12x1.5
			HD-GAI-10L-M-14	HD-GAI-10L-M-14-SS	10	16x1.5	14x1.5
			HD-GAI-12L-M-16	HD-GAI-12L-M-16-SS	12	18x1.5	16x1.5
			HD-GAI-15L-M-18	HD-GAI-15L-M-18-SS	15	22x1.5	18x1.5
			HD-GAI-18L-M-22	HD-GAI-18L-M-22-SS	18	26x1.5	22x1.5
		160	HD-GAI-22L-M-26	HD-GAI-22L-M-26-SS	22	30x2	26x1.5
			HD-GAI-28L-M-33	HD-GAI-28L-M-33-SS	28	36x2	33x2
			HD-GAI-35L-M-42	HD-GAI-35L-M-42-SS	35	45x2	42x2
			HD-GAI-42L-M-48	HD-GAI-42L-M-48-SS	42	52x2	48x2
	S	630	HD-GAI-06S-M-12	HD-GAI-06S-M-12-SS	6	14x1.5	12x1.5
			HD-GAI-08S-M-14	HD-GAI-08S-M-14-SS	8	16x1.5	14x1.5
			HD-GAI-10S-M-16	HD-GAI-10S-M-16-SS	10	18x1.5	16x1.5
			HD-GAI-12S-M-18	HD-GAI-12S-M-18-SS	12	20x1.5	18x1.5
			HD-GAI-14S-M-20	HD-GAI-14S-M-20-SS	14	22x1.5	20x1.5
			HD-GAI-16S-M-22	HD-GAI-16S-M-22-SS	16	24x1.5	22x1.5
		400	HD-GAI-20S-M-27	HD-GAI-20S-M-27-SS	20	30x2	27x2
			HD-GAI-25S-M-33	HD-GAI-25S-M-33-SS	25	36x2	33x2
			HD-GAI-30S-M-42	HD-GAI-30S-M-42-SS	30	42x2	42x2
			HD-GAI-38S-M-48	HD-GAI-38S-M-48-SS	38	52x2	48x2

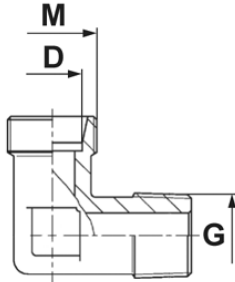


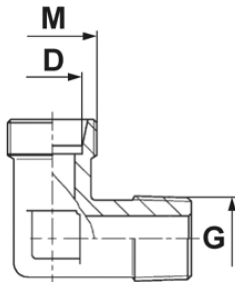
## HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [BSP]
Adjustable 90° connector with BSP thread, ISO 1179-G seal    <b>WE - BG</b>	L	315	HD-WE-06L-BG-02	-	6	12x1.5	1/8
			HD-WE-08L-BG-04	-	8	14x1.5	1/4
			HD-WE-10L-BG-04	-	10	16x1.5	1/4
		250	HD-WE-12L-BG-06	-	12	18x1.5	3/8
			HD-WE-15L-BG-08	-	15	22x1.5	1/2
			HD-WE-18L-BG-08	-	18	26x1.5	1/2
		160	HD-WE-22L-BG-12	-	22	30x2	3/4
			HD-WE-28L-BG-16	-	28	36x2	1
			HD-WE-35L-BG-20	-	35	45x2	1.1/4
	S	315	HD-WE-42L-BG-24	-	42	52x2	1.1/2
			HD-WE-06S-BG-04	-	6	14x1.5	1/4
			HD-WE-08S-BG-04	-	8	16x1.5	1/4
		250	HD-WE-10S-BG-06	-	10	18x1.5	3/8
			HD-WE-12S-BG-06	-	12	20x1.5	3/8
			HD-WE-14S-BG-08	-	14	22x1.5	1/2
			HD-WE-16S-BG-08	-	16	24x1.5	1/2
			HD-WE-20S-BG-12	-	20	30x2	3/4
		200	HD-WE-25S-BG-16	-	25	36x2	1
			HD-WE-30S-BG-20	-	30	42x2	1.1/4
		160	HD-WE-38S-BG-24	-	38	52x2	1.1/2

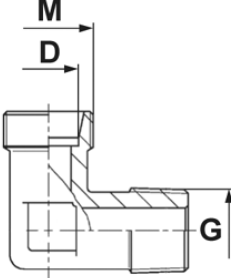
description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [mm]
Adjustable 90° connector with metric thread, ISO 6149-G seal    <b>WE - MG</b>	L	315	HD-WE-06L-MG-10	-	6	12x1.5	10x1
			HD-WE-08L-MG-12	-	8	14x1.5	12x1.5
			HD-WE-10L-MG-14	-	10	16x1.5	14x1.5
			HD-WE-12L-MG-16	-	12	18x1.5	16x1.5
			HD-WE-15L-MG-18	-	15	22x1.5	18x1.5
		250	HD-WE-18L-MG-22	-	18	26x1.5	22x1.5
			HD-WE-22L-MG-27	-	22	30x2	27x2
		160	HD-WE-28L-MG-33	-	28	36x2	33x2
			HD-WE-35L-MG-42	-	35	45x2	42x2
			HD-WE-42L-MG-48	-	42	52x2	48x2
	S	315	HD-WE-06S-MG-12	-	6	14x1.5	12x1.5
			HD-WE-08S-MG-14	-	8	16x1.5	14x1.5
			HD-WE-10S-MG-16	-	10	18x1.5	16x1.5
			HD-WE-12S-MG-18	-	12	20x1.5	18x1.5
		250	HD-WE-14S-MG-20	-	14	22x1.5	20x1.5
			HD-WE-16S-MG-22	-	16	24x1.5	22x1.5
			HD-WE-20S-MG-27	-	20	30x2	27x2
		160	HD-WE-25S-MG-33	-	25	36x2	33x2
			HD-WE-30S-MG-42	-	30	42x2	42x2
			HD-WE-38S-MG-48	-	38	52x2	48x2

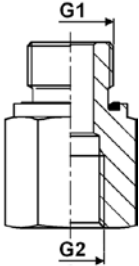
## HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [BSPT]
90° connector with BSPT tapered thread    <b>WE - BT</b>	L	315	HD-WE-06L-BT-02	HD-WE-06L-BT-02-SS	6	12x1.5	1/8
			HD-WE-08L-BT-04	HD-WE-08L-BT-04-SS	8	14x1.5	1/4
			HD-WE-10L-BT-04	HD-WE-10L-BT-04-SS	10	16x1.5	1/4
			HD-WE-12L-BT-06	HD-WE-12L-BT-06-SS	12	18x1.5	3/8
			HD-WE-15L-BT-08	HD-WE-15L-BT-08-SS	15	22x1.5	1/2
			HD-WE-18L-BT-08	HD-WE-18L-BT-08-SS	18	26x1.5	1/2
		160	HD-WE-22L-BT-12	HD-WE-22L-BT-12-SS	22	30x2	3/4
			HD-WE-28L-BT-16	HD-WE-28L-BT-16-SS	28	36x2	1
			HD-WE-35L-BT-20	HD-WE-35L-BT-20-SS	35	45x2	1.1/4
			HD-WE-42L-BT-24	HD-WE-42L-BT-24-SS	42	52x2	1.1/2
	S	630	HD-WE-06S-BT-04	HD-WE-06S-BT-04-SS	6	14x1.5	1/4
			HD-WE-08S-BT-04	HD-WE-08S-BT-04-SS	8	16x1.5	1/4
			HD-WE-10S-BT-06	HD-WE-10S-BT-06-SS	10	18x1.5	3/8
			HD-WE-12S-BT-06	HD-WE-12S-BT-06-SS	12	20x1.5	3/8
			HD-WE-14S-BT-08	HD-WE-14S-BT-08-SS	14	22x1.5	1/2
			HD-WE-16S-BT-08	HD-WE-16S-BT-08-SS	16	24x1.5	1/2
		400	HD-WE-20S-BT-12	HD-WE-20S-BT-12-SS	20	30x2	3/4
			HD-WE-25S-BT-16	HD-WE-25S-BT-16-SS	25	36x2	1
			HD-WE-30S-BT-20	HD-WE-30S-BT-20-SS	30	42x2	1.1/4
			HD-WE-38S-BT-24	HD-WE-38S-BT-24-SS	38	52x2	1.1/2

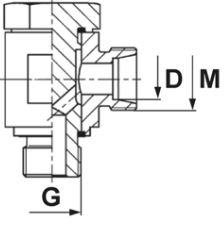
description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [mm]
90° connector with metric tapered thread    <b>WE - MT</b>	L	315	HD-WE-06L-MT-10	HD-WE-06L-MT-10-SS	6	12x1.5	10x1
			HD-WE-08L-MT-12	HD-WE-08L-MT-12-SS	8	14x1.5	12x1.5
			HD-WE-10L-MT-14	HD-WE-10L-MT-14-SS	10	16x1.5	14x1.5
			HD-WE-12L-MT-16	HD-WE-12L-MT-16-SS	12	18x1.5	16x1.5
			HD-WE-15L-MT-18	HD-WE-15L-MT-18-SS	15	22x1.5	18x1.5
			HD-WE-18L-MT-22	HD-WE-18L-MT-22-SS	18	26x1.5	22x1.5
	S	630	HD-WE-06S-MT-12	HD-WE-06S-MT-12-SS	6	14x1.5	12x1.5
			HD-WE-08S-MT-14	HD-WE-08S-MT-14-SS	8	16x1.5	14x1.5
			HD-WE-10S-MT-16	HD-WE-10S-MT-16-SS	10	18x1.5	16x1.5
			HD-WE-12S-MT-18	HD-WE-12S-MT-18-SS	12	20x1.5	18x1.5
			HD-WE-14S-MT-20	HD-WE-14S-MT-20-SS	14	22x1.5	20x1.5
		400	HD-WE-16S-MT-22	HD-WE-16S-MT-22-SS	16	24x1.5	22x1.5

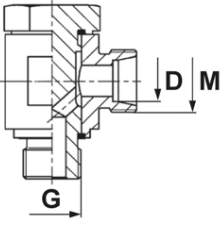
## HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [NPT]
90° connector with NPT tapered thread    <b>WE - NT</b>	L	315	HD-WE-06L-NT-02	HD-WE-06L-NT-02-SS	6	12x1.5	1/8
			HD-WE-08L-NT-04	HD-WE-08L-NT-04-SS	8	14x1.5	1/4
			HD-WE-10L-NT-04	HD-WE-10L-NT-04-SS	10	16x1.5	1/4
			HD-WE-12L-NT-06	HD-WE-12L-NT-06-SS	12	18x1.5	3/8
			HD-WE-15L-NT-08	HD-WE-15L-NT-08-SS	15	22x1.5	1/2
			HD-WE-18L-NT-08	HD-WE-18L-NT-08-SS	18	26x1.5	1/2
		160	HD-WE-22L-NT-12	HD-WE-22L-NT-12-SS	22	30x2	3/4
			HD-WE-28L-NT-16	HD-WE-28L-NT-16-SS	28	36x2	1
			HD-WE-35L-NT-20	HD-WE-35L-NT-20-SS	35	45x2	1.1/4
			HD-WE-42L-NT-24	HD-WE-42L-NT-24-SS	42	52x2	1.1/2
	S	630	HD-WE-06S-NT-04	HD-WE-06S-NT-04-SS	6	14x1.5	1/4
			HD-WE-08S-NT-04	HD-WE-08S-NT-04-SS	8	16x1.5	1/4
			HD-WE-10S-NT-06	HD-WE-10S-NT-06-SS	10	18x1.5	3/8
			HD-WE-12S-NT-06	HD-WE-12S-NT-06-SS	12	20x1.5	3/8
			HD-WE-14S-NT-08	HD-WE-14S-NT-08-SS	14	22x1.5	1/2
		400	HD-WE-16S-NT-08	HD-WE-16S-NT-08-SS	16	24x1.5	1/2
			HD-WE-20S-NT-12	HD-WE-20S-NT-12-SS	20	30x2	3/4
			HD-WE-25S-NT-16	HD-WE-25S-NT-16-SS	25	36x2	1
			HD-WE-30S-NT-20	HD-WE-30S-NT-20-SS	30	42x2	1.1/4
		315	HD-WE-38S-NT-24	HD-WE-38S-NT-24-SS	38	52x2	1.1/2

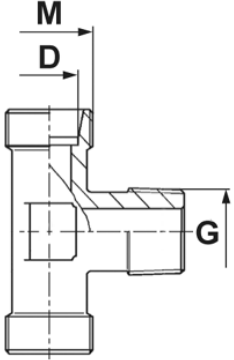
description	press. [bar]	code (galvanized steel)	code (AISI 316)	G1 [BSP]	G2 [BSP]
BSP male connector with BSP female thread, DIN 3852-E seal    <b>RI - BE</b>	630	HD-RI-02-04-BE	HD-RI-02-04-BE-SS	1/8	1/4
		HD-RI-04-02-BE	HD-RI-04-02-BE-SS	1/4	1/8
		HD-RI-04-06-BE	HD-RI-04-06-BE-SS	1/4	3/8
		HD-RI-04-08-BE	HD-RI-04-08-BE-SS	1/4	1/2
		HD-RI-06-02-BE	HD-RI-06-02-BE-SS	3/8	1/8
		HD-RI-06-04-BE	HD-RI-06-04-BE-SS	3/8	1/4
		HD-RI-06-08-BE	HD-RI-06-08-BE-SS	3/8	1/2
		HD-RI-08-04-BE	HD-RI-08-04-BE-SS	1/2	1/4
	400	HD-RI-08-06-BE	HD-RI-08-06-BE-SS	1/2	3/8
		HD-RI-08-12-BE	HD-RI-08-12-BE-SS	1/2	3/4
		HD-RI-12-06-BE	HD-RI-12-06-BE-SS	3/4	3/8
		HD-RI-12-08-BE	HD-RI-12-08-BE-SS	3/4	1/2
		HD-RI-12-16-BE	HD-RI-12-16-BE-SS	3/4	1
		HD-RI-16-04-BE	HD-RI-16-04-BE-SS	1	1/4
		HD-RI-16-06-BE	HD-RI-16-06-BE-SS	1	3/8
		HD-RI-16-08-BE	HD-RI-16-08-BE-SS	1	1/2
		HD-RI-16-12-BE	HD-RI-16-12-BE-SS	1	3/4
		HD-RI-20-12-BE	HD-RI-20-12-BE-SS	1.1/4	3/4
		HD-RI-20-16-BE	HD-RI-20-16-BE-SS	1.1/4	1
	315	HD-RI-24-16-BE	HD-RI-24-16-BE-SS	1.1/2	1

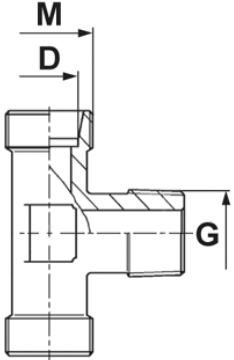
## HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [BSP]
<b>BANJO connector with BSP thread, DIN 3852- E seal</b>    <b>WH - BE</b>	L	315	HD-WH-06L-BE-02	HD-WH-06L-BE-02-SS	6	12x1.5	1/8
			HD-WH-08L-BE-04	HD-WH-08L-BE-04-SS	8	14x1.5	1/4
			HD-WH-10L-BE-04	HD-WH-10L-BE-04-SS	10	16x1.5	1/4
			HD-WH-12L-BE-06	HD-WH-12L-BE-06-SS	12	18x1.5	3/8
			HD-WH-15L-BE-08	HD-WH-15L-BE-08-SS	15	22x1.5	1/2
			HD-WH-18L-BE-08	HD-WH-18L-BE-08-SS	18	26x1.5	1/2
		160	HD-WH-22L-BE-12	HD-WH-22L-BE-12-SS	22	30x2	3/4
			HD-WH-28L-BE-16	HD-WH-28L-BE-16-SS	28	36x2	1
			HD-WH-35L-BE-20	HD-WH-35L-BE-20-SS	35	45x2	1.1/4
			HD-WH-42L-BE-24	HD-WH-42L-BE-24-SS	42	52x2	1.1/2
	S	630	HD-WH-06S-BE-04	HD-WH-06S-BE-04-SS	6	14x1.5	1/4
			HD-WH-08S-BE-04	HD-WH-08S-BE-04-SS	8	16x1.5	1/4
			HD-WH-10S-BE-06	HD-WH-10S-BE-06-SS	10	18x1.5	3/8
			HD-WH-12S-BE-06	HD-WH-12S-BE-06-SS	12	20x1.5	3/8
			HD-WH-14S-BE-08	HD-WH-14S-BE-08-SS	14	22x1.5	1/2
			HD-WH-16S-BE-08	HD-WH-16S-BE-08-SS	16	24x1.5	1/2
		400	HD-WH-20S-BE-12	HD-WH-20S-BE-12-SS	20	30x2	3/4
			HD-WH-25S-BE-16	HD-WH-25S-BE-16-SS	25	36x2	1
			HD-WH-30S-BE-20	HD-WH-30S-BE-20-SS	30	42x2	1.1/4
		315	HD-WH-38S-BE-24	HD-WH-38S-BE-24-SS	38	52x2	1.1/2

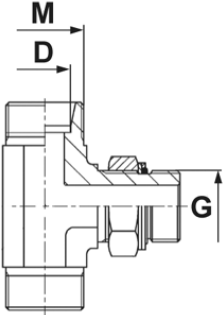
description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [mm]
<b>BANJO connector with metric thread, DIN 3852- E seal</b>    <b>WH - ME</b>	L	315	HD-WH-06L-ME-10	HD-WH-06L-ME-10-SS	6	12x1.5	10x1
			HD-WH-08L-ME-12	HD-WH-08L-ME-12-SS	8	14x1.5	12x1.5
			HD-WH-10L-ME-14	HD-WH-10L-ME-14-SS	10	16x1.5	14x1.5
			HD-WH-12L-ME-16	HD-WH-12L-ME-16-SS	12	18x1.5	16x1.5
			HD-WH-15L-ME-18	HD-WH-15L-ME-18-SS	15	22x1.5	18x1.5
			HD-WH-18L-ME-22	HD-WH-18L-ME-22-SS	18	26x1.5	22x1.5
		160	HD-WH-22L-ME-26	HD-WH-22L-ME-26-SS	22	30x2	26x1.5
			HD-WH-28L-ME-33	HD-WH-28L-ME-33-SS	28	36x2	33x2
			HD-WH-35L-ME-42	HD-WH-35L-ME-42-SS	35	45x2	42x2
			HD-WH-42L-ME-48	HD-WH-42L-ME-48-SS	42	52x2	48x2
	S	630	HD-WH-06S-ME-12	HD-WH-06S-ME-12-SS	6	14x1.5	12x1.5
			HD-WH-08S-ME-14	HD-WH-08S-ME-14-SS	8	16x1.5	14x1.5
			HD-WH-10S-ME-16	HD-WH-10S-ME-16-SS	10	18x1.5	16x1.5
			HD-WH-12S-ME-18	HD-WH-12S-ME-18-SS	12	20x1.5	18x1.5
			HD-WH-14S-ME-20	HD-WH-14S-ME-20-SS	14	22x1.5	20x1.5
			HD-WH-16S-ME-22	HD-WH-16S-ME-22-SS	16	24x1.5	22x1.5
		400	HD-WH-20S-ME-27	HD-WH-20S-ME-27-SS	20	30x2	27x2
			HD-WH-25S-ME-33	HD-WH-25S-ME-33-SS	25	36x2	33x2
			HD-WH-30S-ME-42	HD-WH-30S-ME-42-SS	30	42x2	42x2
		315	HD-WH-38S-ME-48	HD-WH-38S-ME-48-SS	38	52x2	48x2

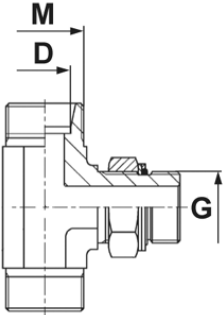
## HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [BSPT]
<p>Connector with BSPT tapered thread</p>  <p><b>TE - BT</b></p>	L	315	HD-TE-06L-BT-02	HD-TE-06L-BT-02-SS	6	12x1.5	1/8
			HD-TE-08L-BT-04	HD-TE-08L-BT-04-SS	8	14x1.5	1/4
			HD-TE-10L-BT-04	HD-TE-10L-BT-04-SS	10	16x1.5	1/4
			HD-TE-12L-BT-06	HD-TE-12L-BT-06-SS	12	18x1.5	3/8
			HD-TE-15L-BT-08	HD-TE-15L-BT-08-SS	15	22x1.5	1/2
			HD-TE-18L-BT-08	HD-TE-18L-BT-08-SS	18	26x1.5	1/2
		160	HD-TE-22L-BT-12	HD-TE-22L-BT-12-SS	22	30x2	3/4
			HD-TE-28L-BT-16	HD-TE-28L-BT-16-SS	28	36x2	1
			HD-TE-35L-BT-20	HD-TE-35L-BT-20-SS	35	45x2	1.1/4
			HD-TE-42L-BT-24	HD-TE-42L-BT-24-SS	42	52x2	1.1/2
	S	630	HD-TE-06S-BT-04	HD-TE-06S-BT-04-SS	6	14x1.5	1/4
			HD-TE-08S-BT-04	HD-TE-08S-BT-04-SS	8	16x1.5	1/4
			HD-TE-10S-BT-06	HD-TE-10S-BT-06-SS	10	18x1.5	3/8
			HD-TE-12S-BT-06	HD-TE-12S-BT-06-SS	12	20x1.5	3/8
			HD-TE-14S-BT-08	HD-TE-14S-BT-08-SS	14	22x1.5	1/2
		400	HD-TE-16S-BT-08	HD-TE-16S-BT-08-SS	16	24x1.5	1/2
			HD-TE-20S-BT-12	HD-TE-20S-BT-12-SS	20	30x2	3/4
			HD-TE-25S-BT-16	HD-TE-25S-BT-16-SS	25	36x2	1
			HD-TE-30S-BT-20	HD-TE-30S-BT-20-SS	30	42x2	1.1/4
		315	HD-TE-38S-BT-24	HD-TE-38S-BT-24-SS	38	52x2	1.1/2

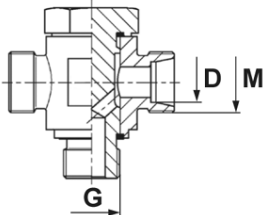
description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [NPT]
<p>Connector with NPT tapered thread</p>  <p><b>TE - NT</b></p>	L	315	HD-TE-06L-NT-02	HD-TE-06L-NT-02-SS	6	12x1.5	1/8
			HD-TE-08L-NT-04	HD-TE-08L-NT-04-SS	8	14x1.5	1/4
			HD-TE-10L-NT-04	HD-TE-10L-NT-04-SS	10	16x1.5	1/4
			HD-TE-12L-NT-06	HD-TE-12L-NT-06-SS	12	18x1.5	3/8
			HD-TE-15L-NT-08	HD-TE-15L-NT-08-SS	15	22x1.5	1/2
			HD-TE-18L-NT-08	HD-TE-18L-NT-08-SS	18	26x1.5	1/2
		160	HD-TE-22L-NT-12	HD-TE-22L-NT-12-SS	22	30x2	3/4
			HD-TE-28L-NT-16	HD-TE-28L-NT-16-SS	28	36x2	1
			HD-TE-35L-NT-20	HD-TE-35L-NT-20-SS	35	45x2	1.1/4
			HD-TE-42L-NT-24	HD-TE-42L-NT-24-SS	42	52x2	1.1/2
	S	630	HD-TE-06S-NT-04	HD-TE-06S-NT-04-SS	6	14x1.5	1/4
			HD-TE-08S-NT-04	HD-TE-08S-NT-04-SS	8	16x1.5	1/4
			HD-TE-10S-NT-06	HD-TE-10S-NT-06-SS	10	18x1.5	3/8
			HD-TE-12S-NT-06	HD-TE-12S-NT-06-SS	12	20x1.5	3/8
			HD-TE-14S-NT-08	HD-TE-14S-NT-08-SS	14	22x1.5	1/2
		400	HD-TE-16S-NT-08	HD-TE-16S-NT-08-SS	16	24x1.5	1/2
			HD-TE-20S-NT-12	HD-TE-20S-NT-12-SS	20	30x2	3/4
			HD-TE-25S-NT-16	HD-TE-25S-NT-16-SS	25	36x2	1
			HD-TE-30S-NT-20	HD-TE-30S-NT-20-SS	30	42x2	1.1/4
		315	HD-TE-38S-NT-24	HD-TE-38S-NT-24-SS	38	52x2	1.1/2

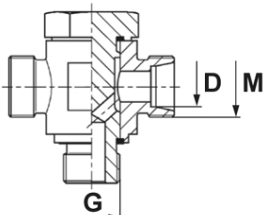
## HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [BSP]
Adjustable connector with BSP thread, ISO 1179-G seal   <b>TE - BG</b>	L	315	HD-TE-06L-BG-02	-	6	12x1.5	1/8
			HD-TE-08L-BG-04	-	8	14x1.5	1/4
			HD-TE-10L-BG-04	-	10	16x1.5	1/4
		250	HD-TE-12L-BG-06	-	12	18x1.5	3/8
			HD-TE-15L-BG-08	-	15	22x1.5	1/2
			HD-TE-18L-BG-08	-	18	26x1.5	1/2
		160	HD-TE-22L-BG-12	-	22	30x2	3/4
			HD-TE-28L-BG-16	-	28	36x2	1
			HD-TE-35L-BG-20	-	35	45x2	1.1/4
			HD-TE-42L-BG-24	-	42	52x2	1.1/2
	S	315	HD-TE-06S-BG-04	-	6	14x1.5	1/4
			HD-TE-08S-BG-04	-	8	16x1.5	1/4
		250	HD-TE-10S-BG-06	-	10	18x1.5	3/8
			HD-TE-12S-BG-06	-	12	20x1.5	3/8
			HD-TE-14S-BG-08	-	14	22x1.5	1/2
			HD-TE-16S-BG-08	-	16	24x1.5	1/2
			HD-TE-20S-BG-12	-	20	30x2	3/4
		200	HD-TE-25S-BG-16	-	25	36x2	1
			HD-TE-30S-BG-20	-	30	42x2	1.1/4
		160	HD-TE-38S-BG-24	-	38	52x2	1.1/2

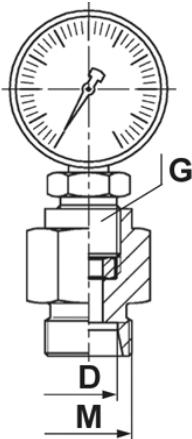
description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [mm]
Adjustable connector with metric thread, ISO 6149-G seal   <b>TE - MG</b>	L	315	HD-TE-06L-MG-10	-	6	12x1.5	10x1
			HD-TE-08L-MG-12	-	8	14x1.5	12x1.5
			HD-TE-10L-MG-14	-	10	16x1.5	14x1.5
			HD-TE-12L-MG-16	-	12	18x1.5	16x1.5
			HD-TE-15L-MG-18	-	15	22x1.5	18x1.5
		250	HD-TE-18L-MG-22	-	18	26x1.5	22x1.5
			HD-TE-22L-MG-26	-	22	30x2	26x1.5
		160	HD-TE-28L-MG-33	-	28	36x2	33x2
			HD-TE-35L-MG-42	-	35	45x2	42x2
			HD-TE-42L-MG-48	-	42	52x2	48x2
	S	315	HD-TE-06S-MG-12	-	6	14x1.5	12x1.5
			HD-TE-08S-MG-14	-	8	16x1.5	14x1.5
			HD-TE-10S-MG-16	-	10	18x1.5	16x1.5
			HD-TE-12S-MG-18	-	12	20x1.5	18x1.5
		250	HD-TE-14S-MG-20	-	14	22x1.5	20x1.5
			HD-TE-16S-MG-22	-	16	24x1.5	22x1.5
			HD-TE-20S-MG-27	-	20	30x2	27x2
		160	HD-TE-25S-MG-33	-	25	36x2	33x2
			HD-TE-30S-MG-42	-	30	42x2	42x2
			HD-TE-38S-MG-48	-	38	52x2	48x2

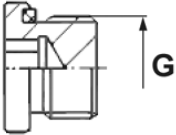
## HIGH PRESSURE - DIN 2353 connectors

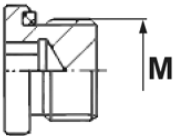
description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [BSP]
BANJO connector with BSP thread, DIN 3852- E seal    <b>TH - BE</b>	L	315	HD-TH-06L-BE-02	HD-TH-06L-BE-02-SS	6	12x1.5	1/8
			HD-TH-08L-BE-04	HD-TH-08L-BE-04-SS	8	14x1.5	1/4
			HD-TH-10L-BE-04	HD-TH-10L-BE-04-SS	10	16x1.5	1/4
			HD-TH-12L-BE-06	HD-TH-12L-BE-06-SS	12	18x1.5	3/8
			HD-TH-15L-BE-08	HD-TH-15L-BE-08-SS	15	22x1.5	1/2
			HD-TH-18L-BE-08	HD-TH-18L-BE-08-SS	18	26x1.5	1/2
		160	HD-TH-22L-BE-12	HD-TH-22L-BE-12-SS	22	30x2	3/4
			HD-TH-28L-BE-16	HD-TH-28L-BE-16-SS	28	36x2	1
			HD-TH-35L-BE-20	HD-TH-35L-BE-20-SS	35	45x2	1.1/4
			HD-TH-42L-BE-24	HD-TH-42L-BE-24-SS	42	52x2	1.1/2
	S	630	HD-TH-06S-BE-04	HD-TH-06S-BE-04-SS	6	14x1.5	1/4
			HD-TH-08S-BE-04	HD-TH-08S-BE-04-SS	8	16x1.5	1/4
			HD-TH-10S-BE-06	HD-TH-10S-BE-06-SS	10	18x1.5	3/8
			HD-TH-12S-BE-06	HD-TH-12S-BE-06-SS	12	20x1.5	3/8
			HD-TH-14S-BE-08	HD-TH-14S-BE-08-SS	14	22x1.5	1/2
		400	HD-TH-16S-BE-08	HD-TH-16S-BE-08-SS	16	24x1.5	1/2
			HD-TH-20S-BE-12	HD-TH-20S-BE-12-SS	20	30x2	3/4
			HD-TH-25S-BE-16	HD-TH-25S-BE-16-SS	25	36x2	1
			HD-TH-30S-BE-20	HD-TH-30S-BE-20-SS	30	42x2	1.1/4
			HD-TH-38S-BE-24	HD-TH-38S-BE-24-SS	38	52x2	1.1/2

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [mm]
BANJO connector with metric thread, DIN 3852- E seal    <b>TH - ME</b>	L	315	HD-TH-06L-ME-10	HD-TH-06L-ME-10-SS	6	12x1.5	10x1
			HD-TH-08L-ME-12	HD-TH-08L-ME-12-SS	8	14x1.5	12x1.5
			HD-TH-10L-ME-14	HD-TH-10L-ME-14-SS	10	16x1.5	14x1.5
			HD-TH-12L-ME-16	HD-TH-12L-ME-16-SS	12	18x1.5	16x1.5
			HD-TH-15L-ME-18	HD-TH-15L-ME-18-SS	15	22x1.5	18x1.5
			HD-TH-18L-ME-22	HD-TH-18L-ME-22-SS	18	26x1.5	22x1.5
		160	HD-TH-22L-ME-26	HD-TH-22L-ME-26-SS	22	30x2	26x1.5
			HD-TH-28L-ME-33	HD-TH-28L-ME-33-SS	28	36x2	33x2
			HD-TH-35L-ME-42	HD-TH-35L-ME-42-SS	35	45x2	42x2
			HD-TH-42L-ME-48	HD-TH-42L-ME-48-SS	42	52x2	48x2
	S	630	HD-TH-06S-ME-12	HD-TH-06S-ME-12-SS	6	14x1.5	12x1.5
			HD-TH-08S-ME-14	HD-TH-08S-ME-14-SS	8	16x1.5	14x1.5
			HD-TH-10S-ME-16	HD-TH-10S-ME-16-SS	10	18x1.5	16x1.5
			HD-TH-12S-ME-18	HD-TH-12S-ME-18-SS	12	20x1.5	18x1.5
			HD-TH-14S-ME-20	HD-TH-14S-ME-20-SS	14	22x1.5	20x1.5
		400	HD-TH-16S-ME-22	HD-TH-16S-ME-22-SS	16	24x1.5	22x1.5
			HD-TH-20S-ME-27	HD-TH-20S-ME-27-SS	20	30x2	27x2
			HD-TH-25S-ME-33	HD-TH-25S-ME-33-SS	25	36x2	33x2
			HD-TH-30S-ME-42	HD-TH-30S-ME-42-SS	30	42x2	42x2
			HD-TH-38S-ME-48	HD-TH-38S-ME-48-SS	38	52x2	48x2

## HIGH PRESSURE - DIN 2353 connectors

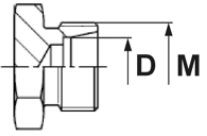
description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]	G [BSP]
Pressure gauge connector with BSP thread   <b>MAV - B</b>	L	315	HD-MAV-06L-B-04	HD-MAV-06L-B-04-SS	6	12x1.5	1/4
			HD-MAV-08L-B-04	HD-MAV-08L-B-04-SS	8	14x1.5	1/4
			HD-MAV-10L-B-04	HD-MAV-10L-B-04-SS	10	16x1.5	1/4
			HD-MAV-12L-B-04	HD-MAV-12L-B-04-SS	12	18x1.5	1/4
	S	630	HD-MAV-06S-B-08	HD-MAV-06S-B-08-SS	6	14x1.5	1/2
			HD-MAV-08S-B-08	HD-MAV-08S-B-08-SS	8	16x1.5	1/2
			HD-MAV-10S-B-08	HD-MAV-10S-B-08-SS	10	18x1.5	1/2
			HD-MAV-12S-B-08	HD-MAV-12S-B-08-SS	12	20x1.5	1/2

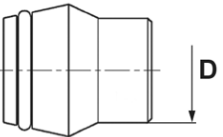
description	press. [bar]	code (galvanized steel)	code (AISI 316)	G [BSP]
Dust cap with BSP thread, DIN 3852-E seal   <b>VSTI - BE</b>	400	HD-VSTI-02-BE	HD-VSTI-02-BE-SS	1/8
		HD-VSTI-04-BE	HD-VSTI-04-BE-SS	1/4
		HD-VSTI-06-BE	HD-VSTI-06-BE-SS	3/8
		HD-VSTI-08-BE	HD-VSTI-08-BE-SS	1/2
		HD-VSTI-12-BE	HD-VSTI-12-BE-SS	3/4
		HD-VSTI-16-BE	HD-VSTI-16-BE-SS	1
	250	HD-VSTI-20-BE	HD-VSTI-20-BE-SS	1.1/4
		HD-VSTI-24-BE	HD-VSTI-24-BE-SS	1.1/2

description	press. [bar]	code (galvanized steel)	code (AISI 316)	G [mm]
Dust cap with metric thread, DIN 3852-E seal   <b>VSTI - ME</b>	400	HD-VSTI-10-ME	HD-VSTI-10-ME-SS	10x1
		HD-VSTI-12-ME	HD-VSTI-12-ME-SS	12x1.5
		HD-VSTI-14-ME	HD-VSTI-14-ME-SS	14x1.5
		HD-VSTI-16-ME	HD-VSTI-16-ME-SS	16x1.5
		HD-VSTI-18-ME	HD-VSTI-18-ME-SS	18x1.5
		HD-VSTI-20-ME	HD-VSTI-20-ME-SS	20x1.5
		HD-VSTI-22-ME	HD-VSTI-22-ME-SS	22x1.5
		HD-VSTI-26-ME	HD-VSTI-26-ME-SS	26x1.5
		HD-VSTI-27-ME	HD-VSTI-27-ME-SS	27x2
		HD-VSTI-33-ME	HD-VSTI-33-ME-SS	33x2
	250	HD-VSTI-42-ME	HD-VSTI-42-ME-SS	42x2
		HD-VSTI-48-ME	HD-VSTI-48-ME-SS	48x2



## HIGH PRESSURE - DIN 2353 connectors

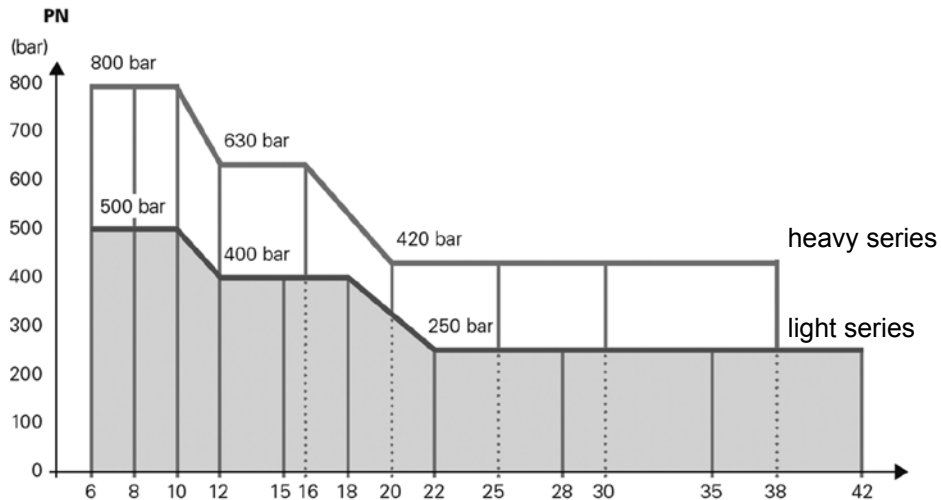
description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]	M [mm]
Dust cap    <b>ROV</b>	L	315	HD-ROV-06L	HD-ROV-06L-SS	6	12x1.5
			HD-ROV-08L	HD-ROV-08L-SS	8	14x1.5
			HD-ROV-10L	HD-ROV-10L-SS	10	16x1.5
			HD-ROV-12L	HD-ROV-12L-SS	12	18x1.5
			HD-ROV-15L	HD-ROV-15L-SS	15	22x1.5
			HD-ROV-18L	HD-ROV-18L-SS	18	26x1.5
		160	HD-ROV-22L	HD-ROV-22L-SS	22	30x2
			HD-ROV-28L	HD-ROV-28L-SS	28	36x2
			HD-ROV-35L	HD-ROV-35L-SS	35	45x2
			HD-ROV-42L	HD-ROV-42L-SS	42	52x2
	S	630	HD-ROV-06S	HD-ROV-06S-SS	6	14x1.5
			HD-ROV-08S	HD-ROV-08S-SS	8	16x1.5
			HD-ROV-10S	HD-ROV-10S-SS	10	18x1.5
			HD-ROV-12S	HD-ROV-12S-SS	12	20x1.5
			HD-ROV-14S	HD-ROV-14S-SS	14	22x1.5
		400	HD-ROV-16S	HD-ROV-16S-SS	16	24x1.5
			HD-ROV-20S	HD-ROV-20S-SS	20	30x2
			HD-ROV-25S	HD-ROV-25S-SS	25	36x2
			HD-ROV-30S	HD-ROV-30S-SS	30	42x2
			HD-ROV-38S	HD-ROV-38S-SS	38	52x2

description	series	press. [bar]	code (galvanized steel)	code (AISI 316)	D [mm]
Plug    <b>VKA</b>	L/S	630	HD-VKA-06L-S	HD-VKA-06L-S-SS	6
			HD-VKA-08L-S	HD-VKA-08L-S-SS	8
			HD-VKA-10L-S	HD-VKA-10L-S-SS	10
			HD-VKA-12L-S	HD-VKA-12L-S-SS	12
	L	315	HD-VKA-15L	HD-VKA-15L-SS	15
			HD-VKA-18L	HD-VKA-18L-SS	18
		160	HD-VKA-22L	HD-VKA-22L-SS	22
			HD-VKA-28L	HD-VKA-28L-SS	28
			HD-VKA-35L	HD-VKA-35L-SS	35
			HD-VKA-42L	HD-VKA-42L-SS	42
	S	630	HD-VKA-14S	HD-VKA-14S-SS	14
			HD-VKA-16S	HD-VKA-16S-SS	16
		400	HD-VKA-20S	HD-VKA-20S-SS	20
			HD-VKA-25S	HD-VKA-25S-SS	25
			HD-VKA-30S	HD-VKA-30S-SS	30
			HD-VKA-38S	HD-VKA-38S-SS	38

## HIGH PRESSURE - DIN 2353 connectors

### Metric pipe connection system - Eaton Walterscheid™

DIN2353 Eaton Walterscheid™ connectors are designed for the most challenging applications of pipes connected and sealed on a 24° cone. Eaton Walterscheid™ system ensures tightness of the connection up to 800 bar (for heavy series) and 500 bar (for light series).



DIN2353 Eaton Walterscheid™ connectors made of carbon steel are plated with nickel-free, Guardian Seal™ cover to provide exceptional resistance to corrosion.

The corrosion resistance of Guardian Seal™ cover exceeds the German VDMA24576 K5 standard (min. 720 hours in a salt spray chamber until red corrosion appears), qualifying the connectors for operation in the most demanding and stringent conditions. Guardian Seal™ is relatively more environment friendly. The cover is free of nickel and solvents. It meets global requirements of such European directives as RoHS (Restriction of Hazardous Substances), ELV (End-of-Life Vehicle) and REACH (Regulation for Registration, Evaluation, Authorization and Restriction for Chemicals).

DIN2353 Eaton Walterscheid™ connector covered with corrosion resistant Guardian Seal™ is a popular solution in marine and offshore industry, for heavy duty application in agriculture, mining, railway and construction.



**New Guardian Seal™ plating technology succeeds  
wherever standard protection fails!!!**

## HIGH PRESSURE - DIN 2353 connectors

Three options of Eaton Walterscheid™ system are available depending on the conditions of operation:

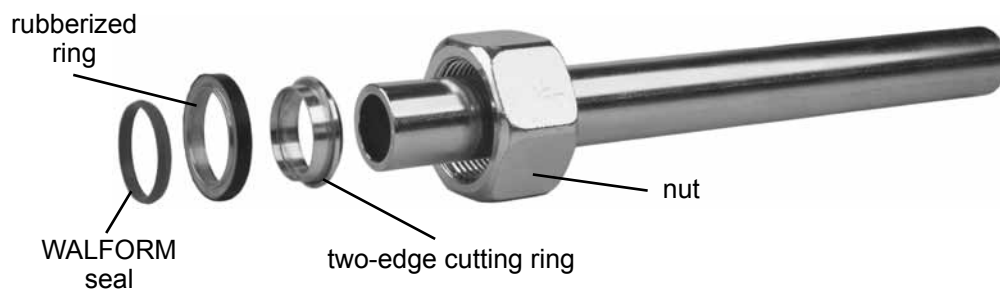
### WalPro - static operation

A nut with a cutting ring. The profiled construction of the ring ensures optimal cut penetration and a clamp evenly distributed all around the pipe diameter. Sealing is achieved when the ring is pressed against 24° cone in a nut body during tightening. Available in stainless steel also. A complete system with a cutting ring and a nut is available only as a set marked with a code HDW-MWP...



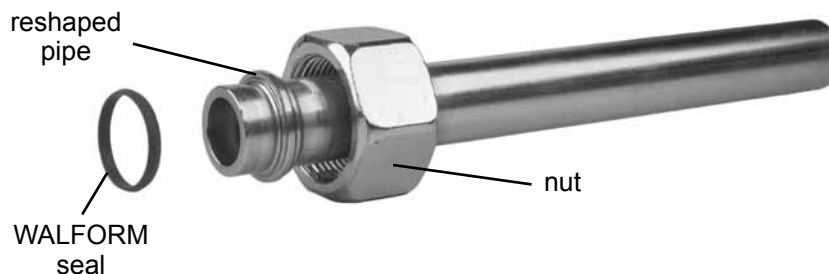
### WalRing - installation prone to vibration

A nut with a two-edge cutting ring integrated with a hardened, rubberized support ring with a special, elastomer (Viton) WALFORMplus seal. The support ring guarantees that the cutting ring properly penetrates a pipe. Reliable sealing is obtained when an elastomer seal is pressed between the pipe and the ring against 24° cone in a nut body during tightening. A complete WalRing system with rings, a seal and a nut is available only as a set marked with a code HDW-MWR...



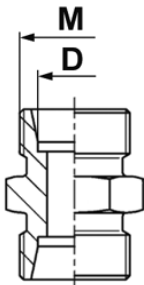
### WALFORMplus - guarantees tightness even in highly dynamic operation conditions, pressure pulsation and mechanical loads

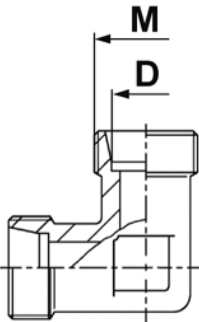
A nut with an elastomer (Viton) seal. For the system to work, the end of the pipe must be reshaped in a special machine intended for this purpose (available at TUBES INTERNATIONAL®). A shoulder formed on the pipe with the machine and the elastomer seal do not require any additional elements such as rings to make tight connection. Reliable sealing is obtained when an elastomer seal is pressed between the shoulder on the pipe and 24° cone in a nut body during tightening. The elements of WALFORMplus system (a seal and a nut) are available only as a set marked with a code HDW-MWF...



# HIGH PRESSURE - DIN 2353 connectors

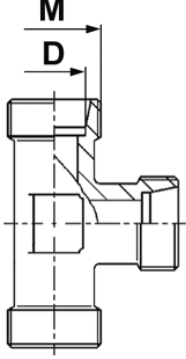
## DIN 2353 Eaton Walterscheid™

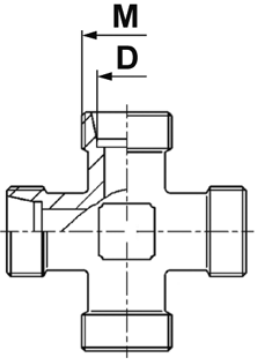
description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]
Straight connector    <b>G</b>	LL	100	HD-G-04LL-W	4	8x1
			HD-G-06LL-W	6	10x1
			HD-G-08LL-W	8	12x1
	L	500	HD-G-06L-W	6	12x1.5
			HD-G-08L-W	8	14x1.5
			HD-G-10L-W	10	16x1.5
		400	HD-G-12L-W	12	18x1.5
			HD-G-15L-W	15	22x1.5
			HD-G-18L-W	18	26x1.5
		250	HD-G-22L-W	22	30x2
			HD-G-28L-W	28	36x2
			HD-G-35L-W	35	45x2
			HD-G-42L-W	42	52x2
	S	800	HD-G-06S-W	6	14x1.5
			HD-G-08S-W	8	16x1.5
			HD-G-10S-W	10	18x1.5
		630	HD-G-12S-W	12	20x1.5
			HD-G-16S-W	16	24x1.5
		420	HD-G-20S-W	20	30x2
			HD-G-25S-W	25	36x2
			HD-G-30S-W	30	42x2
			HD-G-38S-W	38	52x2

description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]
90° connector    <b>W</b>	LL	100	HD-W-04LL-W	4	8x1
			HD-W-06LL-W	6	10x1
			HD-W-08LL-W	8	12x1
	L	500	HD-W-06L-W	6	12x1.5
			HD-W-08L-W	8	14x1.5
			HD-W-10L-W	10	16x1.5
		400	HD-W-12L-W	12	18x1.5
			HD-W-15L-W	15	22x1.5
			HD-W-18L-W	18	26x1.5
		250	HD-W-22L-W	22	30x2
			HD-W-28L-W	28	36x2
			HD-W-35L-W	35	45x2
			HD-W-42L-W	42	52x2
	S	800	HD-W-06S-W	6	14x1.5
			HD-W-08S-W	8	16x1.5
			HD-W-10S-W	10	18x1.5
		630	HD-W-12S-W	12	20x1.5
			HD-W-16S-W	16	24x1.5
		420	HD-W-20S-W	20	30x2
			HD-W-25S-W	25	36x2
			HD-W-30S-W	30	42x2
			HD-W-38S-W	38	52x2

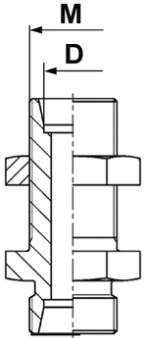
# HIGH PRESSURE - DIN 2353 connectors

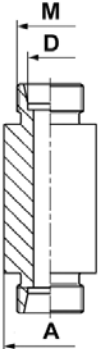
## DIN 2353 Eaton Walterscheid™

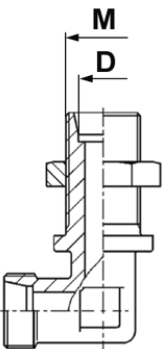
description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]
<p>Tee connector</p>  <p><b>T</b></p>	LL	100	HD-T-04LL-W	4	8x1
			HD-T-06LL-W	6	10x1
			HD-T-08LL-W	8	12x1
	L	500	HD-T-06L-W	6	12x1.5
			HD-T-08L-W	8	14x1.5
			HD-T-10L-W	10	16x1.5
		400	HD-T-12L-W	12	18x1.5
			HD-T-15L-W	15	22x1.5
			HD-T-18L-W	18	26x1.5
		250	HD-T-22L-W	22	30x2
			HD-T-28L-W	28	36x2
			HD-T-35L-W	35	45x2
			HD-T-42L-W	42	52x2
	S	800	HD-T-06S-W	6	14x1.5
			HD-T-08S-W	8	16x1.5
			HD-T-10S-W	10	18x1.5
		630	HD-T-12S-W	12	20x1.5
			HD-T-14S-W	14	22x1.5
			HD-T-16S-W	16	24x1.5
		420	HD-T-20S-W	20	30x2
			HD-T-25S-W	25	36x2
			HD-T-30S-W	30	42x2
		400	HD-T-38S-W	38	52x2

description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]
<p>Cross connector</p>  <p><b>K</b></p>	LL	100	HD-K-04LL-W	4	8x1
			HD-K-06LL-W	6	10x1
			HD-K-08LL-W	8	12x1
	L	500	HD-K-06L-W	6	12x1.5
			HD-K-08L-W	8	14x1.5
			HD-K-10L-W	10	16x1.5
		400	HD-K-12L-W	12	18x1.5
			HD-K-15L-W	15	22x1.5
			HD-K-18L-W	18	26x1.5
		250	HD-K-22L-W	22	30x2
			HD-K-28L-W	28	36x2
			HD-K-35L-W	35	45x2
			HD-K-42L-W	42	52x2
	S	800	HD-K-06S-W	6	14x1.5
			HD-K-08S-W	8	16x1.5
			HD-K-10S-W	10	18x1.5
		630	HD-K-12S-W	12	20x1.5
			HD-K-16S-W	16	24x1.5
			HD-K-20S-W	20	30x2
		420	HD-K-25S-W	25	36x2
			HD-K-30S-W	30	42x2
			HD-K-38S-W	38	52x2

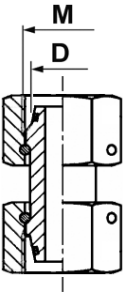
## HIGH PRESSURE - DIN 2353 connectors

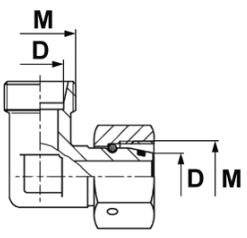
description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]
Straight bulkhead connector    <b>SV</b>	L	500	HD-SV-06L-W	6	12x1.5
			HD-SV-08L-W	8	14x1.5
			HD-SV-10L-W	10	16x1.5
		400	HD-SV-12L-W	12	18x1.5
			HD-SV-15L-W	15	22x1.5
			HD-SV-18L-W	18	26x1.5
		250	HD-SV-22L-W	22	30x2
			HD-SV-28L-W	28	36x2
			HD-SV-35L-W	35	45x2
	S	800	HD-SV-42L-W	42	52x2
			HD-SV-06S-W	6	14x1.5
			HD-SV-08S-W	8	16x1.5
		630	HD-SV-10S-W	10	18x1.5
			HD-SV-12S-W	12	20x1.5
			HD-SV-16S-W	16	24x1.5
		400	HD-SV-20S-W	20	30x2
			HD-SV-25S-W	25	36x2
			HD-SV-30S-W	30	42x2
			HD-SV-38S-W	38	52x2

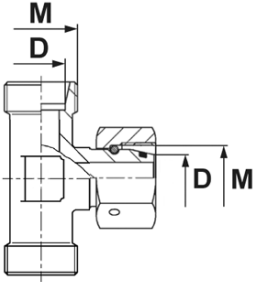
description	series	press. [bar]	code (black steel)	D [mm]	M [mm]
Straight bulkhead connector with weld-in ends    <b>ESV</b>	L	500	HD-ESV-06L-W	6	12x1.5
			HD-ESV-08L-W	8	14x1.5
			HD-ESV-10L-W	10	16x1.5
		400	HD-ESV-12L-W	12	18x1.5
			HD-ESV-15L-W	15	22x1.5
			HD-ESV-18L-W	18	26x1.5
		250	HD-ESV-22L-W	22	30x2
			HD-ESV-28L-W	28	36x2
			HD-ESV-35L-W	35	45x2
	S	800	HD-ESV-42L-W	42	52x2
			HD-ESV-06S-W	6	14x1.5
			HD-ESV-08S-W	8	16x1.5
		630	HD-ESV-10S-W	10	18x1.5
			HD-ESV-12S-W	12	20x1.5
			HD-ESV-16S-W	16	24x1.5
		420	HD-ESV-20S-W	20	30x2
			HD-ESV-25S-W	25	36x2
			HD-ESV-30S-W	30	42x2
			HD-ESV-38S-W	38	52x2

description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]
90° bulkhead connector    <b>WSV</b>	L	500	HD-WSV-06L-W	6	12x1.5
			HD-WSV-08L-W	8	14x1.5
			HD-WSV-10L-W	10	16x1.5
		400	HD-WSV-12L-W	12	18x1.5
			HD-WSV-15L-W	15	22x1.5
			HD-WSV-18L-W	18	26x1.5
		250	HD-WSV-22L-W	22	30x2
			HD-WSV-28L-W	28	36x2
			HD-WSV-35L-W	35	45x2
	S	800	HD-WSV-42L-W	42	52x2
			HD-WSV-06S-W	6	14x1.5
			HD-WSV-08S-W	8	16x1.5
		630	HD-WSV-10S-W	10	18x1.5
			HD-WSV-12S-W	12	20x1.5
			HD-WSV-16S-W	16	24x1.5
		400	HD-WSV-20S-W	20	30x2
			HD-WSV-25S-W	25	36x2
			HD-WSV-30S-W	30	42x2
			HD-WSV-38S-W	38	52x2

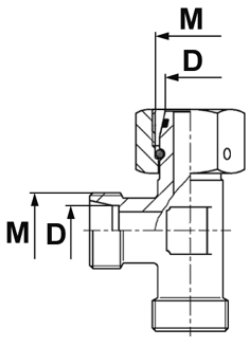
# HIGH PRESSURE - DIN 2353 connectors

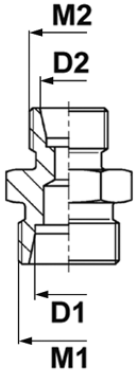
description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]
Adjustable connector    <b>SNV</b>	L	500	HD-SNV-06L-W	6	12x1.5
			HD-SNV-08L-W	8	14x1.5
			HD-SNV-10L-W	10	16x1.5
		400	HD-SNV-12L-W	12	18x1.5
			HD-SNV-15L-W	15	22x1.5
			HD-SNV-18L-W	18	26x1.5
		250	HD-SNV-22L-W	22	30x2
			HD-SNV-28L-W	28	36x2
			HD-SNV-35L-W	35	45x2
	S	800	HD-SNV-42L-W	42	52x2
			HD-SNV-06S-W	6	14x1.5
			HD-SNV-08S-W	8	16x1.5
		630	HD-SNV-10S-W	10	18x1.5
			HD-SNV-12S-W	12	20x1.5
			HD-SNV-16S-W	16	24x1.5
		420	HD-SNV-20S-W	20	30x2
			HD-SNV-25S-W	25	36x2
			HD-SNV-30S-W	30	42x2
		400	HD-SNV-38S-W	38	52x2

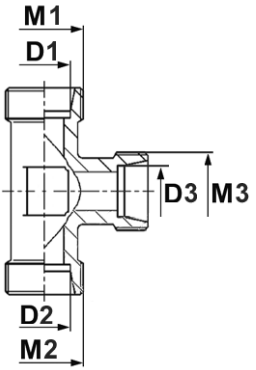
description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]
Adjustable 90° connector, O-ring seal    <b>EVWO</b>	L	500	HD-EVWO-06L-W	6	12x1.5
			HD-EVWO-08L-W	8	14x1.5
			HD-EVWO-10L-W	10	16x1.5
		400	HD-EVWO-12L-W	12	18x1.5
			HD-EVWO-15L-W	15	22x1.5
			HD-EVWO-18L-W	18	26x1.5
		250	HD-EVWO-22L-W	22	30x2
			HD-EVWO-28L-W	28	36x2
			HD-EVWO-35L-W	35	45x2
	S	800	HD-EVWO-42L-W	42	52x2
			HD-EVWO-06S-W	6	14x1.5
			HD-EVWO-08S-W	8	16x1.5
		630	HD-EVWO-10S-W	10	18x1.5
			HD-EVWO-12S-W	12	20x1.5
			HD-EVWO-16S-W	16	24x1.5
		420	HD-EVWO-20S-W	20	30x2
			HD-EVWO-25S-W	25	36x2
			HD-EVWO-30S-W	30	42x2
		400	HD-EVWO-38S-W	38	52x2

description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]
Tee connector, O-ring seal    <b>EVTO</b>	L	500	HD-EVTO-06L-W	6	12x1.5
			HD-EVTO-08L-W	8	14x1.5
			HD-EVTO-10L-W	10	16x1.5
		400	HD-EVTO-12L-W	12	18x1.5
			HD-EVTO-15L-W	15	22x1.5
			HD-EVTO-18L-W	18	26x1.5
		250	HD-EVTO-22L-W	22	30x2
			HD-EVTO-28L-W	28	36x2
			HD-EVTO-35L-W	35	45x2
	S	800	HD-EVTO-42L-W	42	52x2
			HD-EVTO-06S-W	6	14x1.5
			HD-EVTO-08S-W	8	16x1.5
		630	HD-EVTO-10S-W	10	18x1.5
			HD-EVTO-12S-W	12	20x1.5
			HD-EVTO-16S-W	16	24x1.5
		420	HD-EVTO-20S-W	20	30x2
			HD-EVTO-25S-W	25	36x2
			HD-EVTO-30S-W	30	42x2
		400	HD-EVTO-38S-W	38	52x2

## HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]
Adjustable connector (lat- eral), O-ring seal   <b>EVLO</b>	L	500	HD-EVLO-06L-W	6	12x1.5
			HD-EVLO-08L-W	8	14x1.5
			HD-EVLO-10L-W	10	16x1.5
		400	HD-EVLO-12L-W	12	18x1.5
			HD-EVLO-15L-W	15	22x1.5
			HD-EVLO-18L-W	18	26x1.5
		250	HD-EVLO-22L-W	22	30x2
			HD-EVLO-28L-W	28	36x2
			HD-EVLO-35L-W	35	45x2
	S	800	HD-EVLO-42L-W	42	52x2
			HD-EVLO-06S-W	6	14x1.5
			HD-EVLO-08S-W	8	16x1.5
		630	HD-EVLO-10S-W	10	18x1.5
			HD-EVLO-12S-W	12	20x1.5
			HD-EVLO-16S-W	16	24x1.5
		420	HD-EVLO-20S-W	20	30x2
			HD-EVLO-25S-W	25	36x2
			HD-EVLO-30S-W	30	42x2
		400	HD-EVLO-38S-W	38	52x2

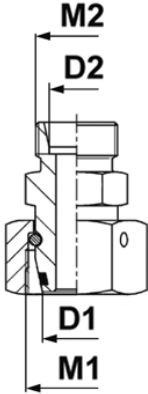
description	series	press. [bar]	code (galvanized steel)	D1 [mm]	M1 [mm]	D2 [mm]	M2 [mm]
Straight reducing con- nector   <b>GR</b>	LL	100	HD-GR-06-04LL-W	6	10x1	4	8x1
			HD-GR-08-04LL-W	8	12x1	4	8x1
	L	500	HD-GR-08-06L-W	8	14x1.5	6	12x1.5
			HD-GR-10-06L-W	10	16x1.5	6	12x1.5
			HD-GR-10-08L-W	10	16x1.5	8	14x1.5
			HD-GR-12-06L-W	12	18x1.5	6	12x1.5
		400	HD-GR-12-08L-W	12	18x1.5	8	14x1.5
			HD-GR-12-10L-W	12	18x1.5	10	16x1.5
			HD-GR-15-10L-W	15	22x1.5	10	16x1.5
			HD-GR-15-12L-W	15	22x1.5	12	18x1.5
			HD-GR-18-10L-W	18	26x1.5	10	16x1.5
			HD-GR-18-12L-W	18	26x1.5	12	18x1.5
			HD-GR-18-15L-W	18	26x1.5	15	22x1.5
			HD-GR-22-15L-W	22	30x2	15	22x1.5
		250	HD-GR-22-18L-W	22	30x2	18	26x1.5
			HD-GR-28-22L-W	28	36x2	22	30x2
	S	630	HD-GR-16-12S-W	16	24x1.5	12	20x1.5
		420	HD-GR-20-16S-W	20	30x2	16	24x1.5
			HD-GR-25-16S-W	25	36x2	16	24x1.5
			HD-GR-25-20S-W	25	36x2	20	30x2

description	series	press. [bar]	code (galvanized steel)	D1 [mm]	M1 [mm]	D2 [mm]	M2 [mm]	D3 [mm]	M3 [mm]
Tee reducing connector   <b>TR</b>	L	500	HD-TR-10-10-06L-W	10	16x1.5	10	16x1.5	6	12x1.5
			HD-TR-10-10-08L-W	10	16x1.5	10	16x1.5	8	14x1.5
		400	HD-TR-12-12-06L-W	12	18x1.5	12	18x1.5	6	12x1.5
			HD-TR-12-12-08L-W	12	18x1.5	12	18x1.5	8	14x1.5
			HD-TR-12-12-10L-W	12	18x1.5	12	18x1.5	10	16x1.5
			HD-TR-12-12-15L-W	12	18x1.5	12	18x1.5	15	22x1.5
			HD-TR-15-12-12L-W	15	22x1.5	12	18x1.5	12	18x1.5
			HD-TR-15-12-15L-W	15	22x1.5	12	18x1.5	15	22x1.5
			HD-TR-15-15-08L-W	15	22x1.5	15	22x1.5	8	14x1.5
			HD-TR-15-15-10L-W	15	22x1.5	15	22x1.5	10	16x1.5
			HD-TR-15-15-12L-W	15	22x1.5	15	22x1.5	12	18x1.5
			HD-TR-18-12-12L-W	18	26x1.5	12	18x1.5	12	18x1.5
			HD-TR-18-18-10L-W	18	26x1.5	18	26x1.5	10	16x1.5
			HD-TR-18-18-12L-W	18	26x1.5	18	26x1.5	12	18x1.5
			HD-TR-18-18-15L-W	18	26x1.5	18	26x1.5	15	22x1.5
		250	HD-TR-22-22-10L-W	22	30x2	22	30x2	10	16x1.5
			HD-TR-22-22-15L-W	22	30x2	22	30x2	15	22x1.5
			HD-TR-28-22-22L-W	28	36x2	22	30x2	22	30x2
			HD-TR-28-28-22L-W	28	36x2	28	36x2	22	30x2



# HIGH PRESSURE - DIN 2353 connectors

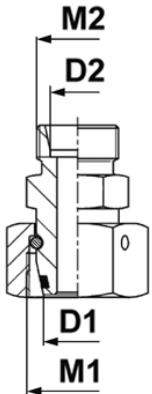
## DIN 2353 Eaton Walterscheid™

description	series	press. [bar]	code (galvanized steel)	D1 [mm]	M1 [mm]	D2 [mm]	M2 [mm]
Straight reducing connector  	L	500	HD-KORO-08-06L-W	8	14x1.5	6	12x1.5
			HD-KORO-10-06L-W	10	16x1.5	6	12x1.5
			HD-KORO-10-08L-W	10	16x1.5	8	14x1.5
		400	HD-KORO-12-06L-W	12	18x1.5	6	12x1.5
			HD-KORO-12-08L-W	12	18x1.5	8	14x1.5
			HD-KORO-12-10L-W	12	18x1.5	10	16x1.5
			HD-KORO-15-06L-W	15	22x1.5	6	12x1.5
			HD-KORO-15-08L-W	15	22x1.5	8	14x1.5
			HD-KORO-15-10L-W	15	22x1.5	10	16x1.5
			HD-KORO-15-12L-W	15	22x1.5	12	18x1.5
			HD-KORO-18-06L-W	18	26x1.5	6	12x1.5
			HD-KORO-18-08L-W	18	26x1.5	8	14x1.5
			HD-KORO-18-10L-W	18	26x1.5	10	16x1.5
			HD-KORO-18-12L-W	18	26x1.5	12	18x1.5
			HD-KORO-18-15L-W	18	26x1.5	15	22x1.5
		250	HD-KORO-22-06L-W	22	30x2	6	12x1.5
			HD-KORO-22-08L-W	22	30x2	8	14x1.5
			HD-KORO-22-10L-W	22	30x2	10	16x1.5
			HD-KORO-22-12L-W	22	30x2	12	18x1.5
			HD-KORO-22-15L-W	22	30x2	15	22x1.5
			HD-KORO-22-18L-W	22	30x2	18	26x1.5
			HD-KORO-28-06L-W	28	36x2	6	12x1.5
			HD-KORO-28-08L-W	28	36x2	8	14x1.5
			HD-KORO-28-10L-W	28	36x2	10	16x1.5
			HD-KORO-28-12L-W	28	36x2	12	18x1.5
			HD-KORO-28-15L-W	28	36x2	15	22x1.5
			HD-KORO-28-18L-W	28	36x2	18	26x1.5
			HD-KORO-28-22L-W	28	36x2	22	30x2
			HD-KORO-35-06L-W	35	45x2	6	12x1.5
			HD-KORO-35-08L-W	35	45x2	8	14x1.5
			HD-KORO-35-10L-W	35	45x2	10	16x1.5
			HD-KORO-35-12L-W	35	45x2	12	18x1.5
			HD-KORO-35-15L-W	35	45x2	15	22x1.5
			HD-KORO-35-18L-W	35	45x2	18	26x1.5
			HD-KORO-35-22L-W	35	45x2	22	30x2
			HD-KORO-35-28L-W	35	45x2	28	36x2
			HD-KORO-42-06L-W	42	52x2	6	12x1.5
			HD-KORO-42-08L-W	42	52x2	8	14x1.5
			HD-KORO-42-10L-W	42	52x2	10	16x1.5
			HD-KORO-42-12L-W	42	52x2	12	18x1.5
			HD-KORO-42-15L-W	42	52x2	15	22x1.5
			HD-KORO-42-18L-W	42	52x2	18	26x1.5
			HD-KORO-42-22L-W	42	52x2	22	30x2
			HD-KORO-42-28L-W	42	52x2	28	36x2
			HD-KORO-42-35L-W	42	52x2	35	45x2

**KORO - L**

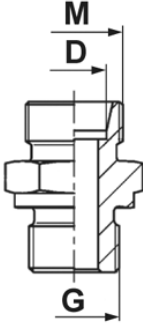
# HIGH PRESSURE - DIN 2353 connectors


## DIN 2353 Eaton Walterscheid™

description	series	press. [bar]	code (galvanized steel)	D1 [mm]	M1 [mm]	D2 [mm]	M2 [mm]
Straight reducing connector    <b>KORO - S</b>	S	800	HD-KORO-08-06S-W	8	16x1.5	6	14x1.5
			HD-KORO-10-06S-W	10	18x1.5	6	14x1.5
			HD-KORO-10-08S-W	10	18x1.5	8	16x1.5
		630	HD-KORO-12-06S-W	12	20x1.5	6	14x1.5
			HD-KORO-12-08S-W	12	20x1.5	8	16x1.5
			HD-KORO-12-10S-W	12	20x1.5	10	18x1.5
			HD-KORO-16-06S-W	16	24x1.5	6	14x1.5
			HD-KORO-16-08S-W	16	24x1.5	8	16x1.5
			HD-KORO-16-10S-W	16	24x1.5	10	18x1.5
			HD-KORO-16-12S-W	16	24x1.5	12	20x1.5
			HD-KORO-16-14S-W	16	24x1.5	14	22x1.5
		420	HD-KORO-20-06S-W	20	30x2	6	14x1.5
			HD-KORO-20-08S-W	20	30x2	8	16x1.5
			HD-KORO-20-10S-W	20	30x2	10	18x1.5
			HD-KORO-20-12S-W	20	30x2	12	20x1.5
			HD-KORO-20-14S-W	20	30x2	14	22x1.5
			HD-KORO-20-16S-W	20	30x2	16	24x1.5
			HD-KORO-25-06S-W	25	36x2	6	14x1.5
			HD-KORO-25-08S-W	25	36x2	8	16x1.5
			HD-KORO-25-10S-W	25	36x2	10	18x1.5
			HD-KORO-25-12S-W	25	36x2	12	20x1.5
			HD-KORO-25-16S-W	25	36x2	16	24x1.5
			HD-KORO-25-20S-W	25	36x2	20	30x2
		400	HD-KORO-30-06S-W	30	42x2	6	14x1.5
			HD-KORO-30-08S-W	30	42x2	8	16x1.5
			HD-KORO-30-10S-W	30	42x2	10	18x1.5
			HD-KORO-30-12S-W	30	42x2	12	20x1.5
			HD-KORO-30-16S-W	30	42x2	16	24x1.5
			HD-KORO-30-20S-W	30	42x2	20	30x2
			HD-KORO-30-25S-W	30	42x2	25	36x2
			HD-KORO-38-06S-W	38	52x2	6	14x1.5
			HD-KORO-38-08S-W	38	52x2	8	16x1.5
			HD-KORO-38-10S-W	38	52x2	10	18x1.5
			HD-KORO-38-12S-W	38	52x2	12	20x1.5
			HD-KORO-38-16S-W	38	52x2	16	24x1.5
			HD-KORO-38-20S-W	38	52x2	20	30x2
			HD-KORO-38-25S-W	38	52x2	25	36x2
			HD-KORO-38-30S-W	38	52x2	30	42x2

# HIGH PRESSURE - DIN 2353 connectors

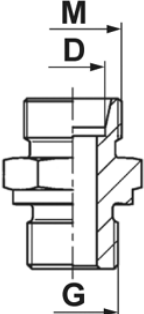
## DIN 2353 Eaton Walterscheid™

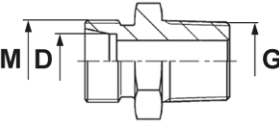
description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]	G [BSP]
Straight connector with BSP thread, DIN 3852- B seal    <b>GE - BB</b>	LL	100	HD-GE-04LL-BB-02-W	4	8x1	1/8
			HD-GE-06LL-BB-02-W	6	10x1	1/8
			HD-GE-08LL-BB-02-W	8	12x1	1/8
	L	400	HD-GE-06L-BB-02-W	6	12x1.5	1/8
			HD-GE-06L-BB-04-W	6	12x1.5	1/4
			HD-GE-06L-BB-06-W	6	12x1.5	3/8
			HD-GE-08L-BB-02-W	8	14x1.5	1/8
			HD-GE-08L-BB-04-W	8	14x1.5	1/4
			HD-GE-08L-BB-06-W	8	14x1.5	3/8
			HD-GE-08L-BB-08-W	8	14x1.5	1/2
			HD-GE-10L-BB-04-W	10	16x1.5	1/4
			HD-GE-10L-BB-06-W	10	16x1.5	3/8
			HD-GE-10L-BB-08-W	10	16x1.5	1/2
			HD-GE-12L-BB-04-W	12	18x1.5	1/4
			HD-GE-12L-BB-06-W	12	18x1.5	3/8
			HD-GE-12L-BB-08-W	12	18x1.5	1/2
			HD-GE-15L-BB-06-W	15	22x1.5	3/8
			HD-GE-15L-BB-08-W	15	22x1.5	1/2
			HD-GE-15L-BB-12-W	15	22x1.5	3/4
			HD-GE-18L-BB-08-W	18	26x1.5	1/2
			HD-GE-18L-BB-12-W	18	26x1.5	3/4
		250	HD-GE-22L-BB-08-W	22	30x2	1/2
			HD-GE-22L-BB-12-W	22	30x2	3/4
			HD-GE-28L-BB-12-W	28	36x2	3/4
			HD-GE-28L-BB-16-W	28	36x2	1
			HD-GE-35L-BB-20-W	35	45x2	1.1/4
			HD-GE-42L-BB-24-W	42	52x2	1.1/2
	S	630	HD-GE-06S-BB-04-W	6	14x1.5	1/4
			HD-GE-08S-BB-04-W	8	16x1.5	1/4
			HD-GE-08S-BB-06-W	8	16x1.5	3/8
			HD-GE-10S-BB-04-W	10	18x1.5	1/4
			HD-GE-10S-BB-06-W	10	18x1.5	3/8
			HD-GE-10S-BB-08-W	10	18x1.5	1/2
			HD-GE-12S-BB-04-W	12	20x1.5	1/4
			HD-GE-12S-BB-06-W	12	20x1.5	3/8
			HD-GE-12S-BB-08-W	12	20x1.5	1/2
			HD-GE-16S-BB-06-W	16	24x1.5	3/8
			HD-GE-16S-BB-08-W	16	24x1.5	1/2
			HD-GE-16S-BB-12-W	16	24x1.5	3/4
		400	HD-GE-20S-BB-08-W	20	30x2	1/2
			HD-GE-20S-BB-12-W	20	30x2	3/4
			HD-GE-25S-BB-12-W	25	36x2	3/4
			HD-GE-25S-BB-16-W	25	36x2	1
		250	HD-GE-30S-BB-20-W	30	42x2	1.1/4
			HD-GE-38S-BB-20-W	38	52x2	1.1/4
			HD-GE-38S-BB-24-W	38	52x2	1.1/2

description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]	G [BSPT]
Straight connector with BSPT tapered thread    <b>GE - BT</b>	LL	100	HD-GE-04LL-BT-02-W	4	8x1	1/8
			HD-GE-06LL-BT-02-W	6	10x1	1/8
			HD-GE-08LL-BT-02-W	8	12x1	1/8
	L	250	HD-GE-06L-BT-04-W	6	12x1.5	1/4
			HD-GE-08L-BT-04-W	8	14x1.5	1/4
			HD-GE-08L-BT-06-W	8	14x1.5	3/8
			HD-GE-10L-BT-04-W	10	16x1.5	1/4
			HD-GE-10L-BT-06-W	10	16x1.5	3/8
			HD-GE-12L-BT-04-W	12	18x1.5	1/4
			HD-GE-12L-BT-06-W	12	18x1.5	3/8
			HD-GE-12L-BT-08-W	12	18x1.5	1/2
			HD-GE-15L-BT-08-W	15	22x1.5	1/2

# HIGH PRESSURE - DIN 2353 connectors


## DIN 2353 Eaton Walterscheid™

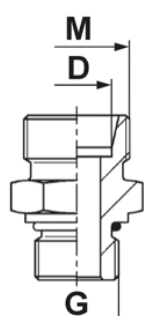
description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]	G [mm]
Straight connector with metric thread, DIN 3852- B seal    <b>GE - MB</b>	LL	100	HD-GE-04LL-MB-08-W	4	8x1	8x1
			HD-GE-06LL-MB-10-W	6	10x1	10x1
			HD-GE-08LL-MB-10-W	8	12x1	10x1
	L	400	HD-GE-06L-MB-10-W	6	12x1.5	10x1
			HD-GE-06L-MB-12-W	6	12x1.5	12x1.5
			HD-GE-08L-MB-12-W	8	14x1.5	12x1.5
			HD-GE-08L-MB-18-W	8	14x1.5	18x1.5
			HD-GE-10L-MB-14-W	10	16x1.5	14x1.5
			HD-GE-10L-MB-16-W	10	16x1.5	16x1.5
			HD-GE-10L-MB-18-W	10	16x1.5	18x1.5
			HD-GE-10L-MB-22-W	10	16x1.5	22x1.5
			HD-GE-12L-MB-16-W	12	18x1.5	16x1.5
			HD-GE-12L-MB-18-W	12	18x1.5	18x1.5
			HD-GE-12L-MB-22-W	12	18x1.5	22x1.5
			HD-GE-15L-MB-18-W	15	22x1.5	18x1.5
			HD-GE-15L-MB-22-W	15	22x1.5	22x1.5
			HD-GE-18L-MB-18-W	18	26x1.5	18x1.5
			HD-GE-18L-MB-22-W	18	26x1.5	22x1.5
		250	HD-GE-22L-MB-26-W	22	30x2	26x1.5
			HD-GE-28L-MB-33-W	28	36x2	33x2
			HD-GE-35L-MB-42-W	35	45x2	42x2
			HD-GE-42L-MB-48-W	42	52x2	48x2
	S	630	HD-GE-06S-MB-12-W	6	14x1.5	12x1.5
			HD-GE-08S-MB-14-W	8	16x1.5	14x1.5
			HD-GE-10S-MB-16-W	10	18x1.5	16x1.5
			HD-GE-12S-MB-18-W	12	20x1.5	18x1.5
		400	HD-GE-16S-MB-22-W	16	24x1.5	22x1.5
			HD-GE-20S-MB-27-W	20	30x2	27x2
			HD-GE-25S-MB-33-W	25	36x2	33x2
		250	HD-GE-30S-MB-42-W	30	42x2	42x2
			HD-GE-38S-MB-48-W	38	52x2	48x2

description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]	G [mm]
Straight connector with metric tapered thread    <b>GE - MT</b>	LL	100	HD-GE-04LL-MT-08-W	4	8x1	8x1
			HD-GE-06LL-MT-10-W	6	10x1	10x1
			HD-GE-08LL-MT-10-W	8	12x1	10x1
	L	250	HD-GE-06L-MT-12-W	6	12x1.5	12x1.5
			HD-GE-08L-MT-12-W	8	14x1.5	12x1.5
			HD-GE-08L-MT-14-W	8	14x1.5	14x1.5
			HD-GE-10L-MT-14-W	10	16x1.5	14x1.5
			HD-GE-10L-MT-16-W	10	16x1.5	16x1.5
			HD-GE-12L-MT-16-W	12	18x1.5	16x1.5
			HD-GE-12L-MT-18-W	12	18x1.5	18x1.5

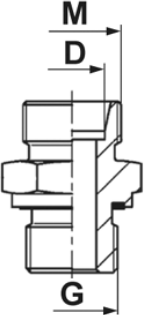
# HIGH PRESSURE - DIN 2353 connectors

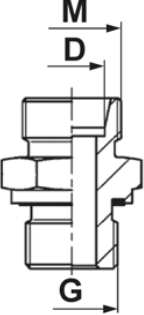
## DIN 2353 Eaton Walterscheid™

description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]	G [NPT]
Straight connector with NPT tapered thread    <b>GE - NT</b>	LL	100	HD-GE-04LL-NT-02-W	4	8x1	1/8
			HD-GE-06LL-NT-02-W	6	10x1	1/8
			HD-GE-08LL-NT-02-W	8	12x1	1/8
	L	315	HD-GE-06L-NT-02-W	6	12x1.5	1/8
			HD-GE-06L-NT-04-W	6	12x1.5	1/4
			HD-GE-08L-NT-04-W	8	14x1.5	1/4
			HD-GE-10L-NT-04-W	10	16x1.5	1/4
			HD-GE-10L-NT-06-W	10	16x1.5	3/8
			HD-GE-12L-NT-04-W	12	18x1.5	1/4
			HD-GE-12L-NT-06-W	12	18x1.5	3/8
			HD-GE-12L-NT-08-W	12	18x1.5	1/2
			HD-GE-15L-NT-08-W	15	22x1.5	1/2
			HD-GE-18L-NT-08-W	18	26x1.5	1/2
		160	HD-GE-22L-NT-12-W	22	30x2	3/4
			HD-GE-28L-NT-16-W	28	36x2	1
			HD-GE-35L-NT-20-W	35	45x2	1.1/4
			HD-GE-42L-NT-24-W	42	52x2	1.1/2
	S	630	HD-GE-06S-NT-04-W	6	14x1.5	1/4
			HD-GE-08S-NT-04-W	8	16x1.5	1/4
			HD-GE-10S-NT-04-W	10	18x1.5	1/4
			HD-GE-10S-NT-06-W	10	18x1.5	3/8
			HD-GE-12S-NT-04-W	12	20x1.5	1/4
			HD-GE-12S-NT-06-W	12	20x1.5	3/8
			HD-GE-12S-NT-08-W	12	20x1.5	1/2
		400	HD-GE-16S-NT-08-W	16	24x1.5	1/2
			HD-GE-20S-NT-12-W	20	30x2	3/4
			HD-GE-25S-NT-16-W	25	36x2	1
			HD-GE-30S-NT-20-W	30	42x2	1.1/4
		315	HD-GE-38S-NT-24-W	38	52x2	1.1/2

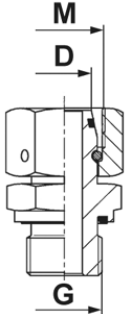
description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]	G [UN-UNF]
Straight connector with UN-UNF thread, O-ring seal    <b>GE - UN</b>	L	400	HD-GE-06L-UN-09-W	6	12x1.5	9/16-18
			HD-GE-08L-UN-07-W	8	14x1.5	7/16-20
			HD-GE-08L-UN-09-W	8	14x1.5	9/16-18
			HD-GE-10L-UN-07-W	10	16x1.5	7/16-20
			HD-GE-10L-UN-09-W	10	16x1.5	9/16-18
			HD-GE-10L-UN-12-W	10	16x1.5	3/4-16
			HD-GE-12L-UN-09-W	12	18x1.5	9/16-18
			HD-GE-12L-UN-12-W	12	18x1.5	3/4-16
			HD-GE-12L-UN-14-W	12	18x1.5	7/8-14
			HD-GE-15L-UN-12-W	15	22x1.5	3/4-16
			HD-GE-15L-UN-14-W	15	22x1.5	7/8-14
			HD-GE-18L-UN-12-W	18	26x1.5	3/4-16
			HD-GE-18L-UN-14-W	18	26x1.5	7/8-14
		250	HD-GE-22L-UN-14-W	22	30x2	7/8-14
			HD-GE-22L-UN-17-W	22	30x2	1.1/16-12
			HD-GE-28L-UN-14-W	28	36x2	7/8-14
			HD-GE-28L-UN-21-W	28	36x2	1.5/16-12
			HD-GE-35L-UN-26-W	35	45x2	1.5/8-12
			HD-GE-42L-UN-26-W	42	52x2	1.5/8-12
	S	630	HD-GE-12S-UN-12-W	12	20x1.5	3/4-16
			HD-GE-16S-UN-12-W	16	24x1.5	3/4-16
			HD-GE-16S-UN-14-W	16	24x1.5	7/8-14
		400	HD-GE-20S-UN-12-W	20	30x2	3/4-16
			HD-GE-20S-UN-14-W	20	30x2	7/8-14
			HD-GE-20S-UN-17-W	20	30x2	1.1/16-12
			HD-GE-25S-UN-21-W	25	36x2	1.5/16-12
		315	HD-GE-30S-UN-26-W	30	42x2	1.5/8-12

## HIGH PRESSURE - DIN 2353 connectors

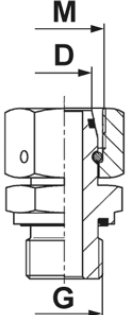
description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]	G [BSP]
Straight connector with BSP thread, DIN 3852- B seal    <b>GE - BE</b>	L	500	HD-GE-06L-BE-02-W	6	12x1.5	1/8
			HD-GE-06L-BE-04-W	6	12x1.5	1/4
			HD-GE-08L-BE-02-W	8	14x1.5	1/8
			HD-GE-08L-BE-04-W	8	14x1.5	1/4
		400	HD-GE-08L-BE-06-W	8	14x1.5	3/8
			HD-GE-10L-BE-04-W	10	16x1.5	1/4
		500	HD-GE-10L-BE-06-W	10	16x1.5	3/8
			HD-GE-10L-BE-08-W	10	16x1.5	1/2
			HD-GE-12L-BE-04-W	12	18x1.5	1/4
		400	HD-GE-12L-BE-06-W	12	18x1.5	3/8
			HD-GE-12L-BE-08-W	12	18x1.5	1/2
			HD-GE-15L-BE-06-W	15	22x1.5	3/8
			HD-GE-15L-BE-08-W	15	22x1.5	1/2
			HD-GE-18L-BE-08-W	18	26x1.5	1/2
			HD-GE-18L-BE-12-W	18	26x1.5	3/4
		250	HD-GE-22L-BE-12-W	22	30x2	3/4
			HD-GE-28L-BE-16-W	28	36x2	1
			HD-GE-35L-BE-20-W	35	45x2	1.1/4
			HD-GE-42L-BE-24-W	42	52x2	1.1/2
	S	800	HD-GE-06S-BE-04-W	6	14x1.5	1/4
			HD-GE-08S-BE-04-W	8	16x1.5	1/4
			HD-GE-08S-BE-06-W	8	16x1.5	3/8
			HD-GE-10S-BE-04-W	10	18x1.5	1/4
			HD-GE-10S-BE-06-W	10	18x1.5	3/8
		630	HD-GE-10S-BE-08-W	10	18x1.5	1/2
			HD-GE-12S-BE-04-W	12	20x1.5	1/4
			HD-GE-12S-BE-06-W	12	20x1.5	3/8
			HD-GE-12S-BE-08-W	12	20x1.5	1/2
			HD-GE-14S-BE-08-W	14	22x1.5	1/2
			HD-GE-16S-BE-06-W	16	24x1.5	3/8
			HD-GE-16S-BE-08-W	16	24x1.5	1/2
			HD-GE-16S-BE-12-W	16	24x1.5	3/4
		420	HD-GE-20S-BE-12-W	20	30x2	3/4
			HD-GE-25S-BE-12-W	25	36x2	3/4
			HD-GE-25S-BE-16-W	25	36x2	1
			HD-GE-30S-BE-20-W	30	42x2	1.1/4
			HD-GE-38S-BE-24-W	38	52x2	1.1/2

description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]	G [mm]
Straight connector with metric thread, DIN 3852- E seal    <b>GE - ME</b>	L	500	HD-GE-06L-ME-10-W	6	12x1.5	10x1
			HD-GE-08L-ME-12-W	8	14x1.5	12x1.5
			HD-GE-10L-ME-14-W	10	16x1.5	14x1.5
			HD-GE-10L-ME-18-W	10	16x1.5	18x1.5
			HD-GE-10L-ME-22-W	10	16x1.5	22x1.5
		400	HD-GE-12L-ME-16-W	12	18x1.5	16x1.5
			HD-GE-12L-ME-18-W	12	18x1.5	18x1.5
			HD-GE-12L-ME-22-W	12	18x1.5	22x1.5
			HD-GE-15L-ME-18-W	15	22x1.5	18x1.5
			HD-GE-15L-ME-22-W	15	22x1.5	22x1.5
			HD-GE-18L-ME-18-W	18	26x1.5	18x1.5
			HD-GE-18L-ME-22-W	18	26x1.5	22x1.5
		250	HD-GE-22L-ME-26-W	22	30x2	26x1.5
			HD-GE-28L-ME-33-W	28	36x2	33x2
			HD-GE-35L-ME-42-W	35	45x2	42x2
			HD-GE-42L-ME-48-W	42	52x2	48x2
	S	800	HD-GE-06S-ME-12-W	6	14x1.5	12x1.5
			HD-GE-08S-ME-14-W	8	16x1.5	14x1.5
			HD-GE-10S-ME-16-W	10	18x1.5	16x1.5
		630	HD-GE-12S-ME-18-W	12	20x1.5	18x1.5
			HD-GE-16S-ME-22-W	16	24x1.5	22x1.5
			HD-GE-20S-ME-27-W	20	30x2	27x2
		420	HD-GE-25S-ME-33-W	25	36x2	33x2
			HD-GE-30S-ME-42-W	30	42x2	42x2
			HD-GE-38S-ME-48-W	38	52x2	48x2

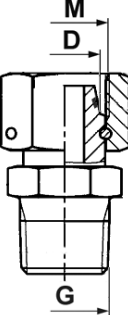
# HIGH PRESSURE - DIN 2353 connectors

description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]	G [BSP]
Adjustable straight connector with BSP thread, DIN 3852-E seal  	L	500	HD-EVGEO-06L-BE-02-W	6	12x1.5	1/8
			HD-EVGEO-08L-BE-04-W	8	14x1.5	1/4
			HD-EVGEO-10L-BE-04-W	10	16x1.5	1/4
		400	HD-EVGEO-12L-BE-04-W	12	18x1.5	1/4
			HD-EVGEO-12L-BE-06-W	12	18x1.5	3/8
			HD-EVGEO-15L-BE-08-W	15	22x1.5	1/2
			HD-EVGEO-18L-BE-08-W	18	26x1.5	1/2
		250	HD-EVGEO-22L-BE-12-W	22	30x2	3/4
			HD-EVGEO-28L-BE-16-W	28	36x2	1
			HD-EVGEO-35L-BE-20-W	35	45x2	1.1/4
			HD-EVGEO-42L-BE-24-W	42	52x2	1.1/2
	S	800	HD-EVGEO-06S-BE-04-W	6	14x1.5	1/4
			HD-EVGEO-08S-BE-04-W	8	16x1.5	1/4
			HD-EVGEO-10S-BE-06-W	10	18x1.5	3/8
		630	HD-EVGEO-12S-BE-06-W	12	20x1.5	3/8
			HD-EVGEO-12S-BE-08-W	12	20x1.5	1/2
			HD-EVGEO-16S-BE-08-W	16	24x1.5	1/2
		420	HD-EVGEO-20S-BE-12-W	20	30x2	3/4
			HD-EVGEO-25S-BE-16-W	25	36x2	1
		400	HD-EVGEO-30S-BE-20-W	30	42x2	1.1/4
			HD-EVGEO-38S-BE-24-W	38	52x2	1.1/2

## EVGEO - BE

description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]	G [mm]
Adjustable straight connector with metric thread, DIN 3852-E seal  	L	500	HD-EVGEO-06L-ME-10-W	6	12x1.5	10x1
			HD-EVGEO-08L-ME-12-W	8	14x1.5	12x1.5
			HD-EVGEO-10L-ME-14-W	10	16x1.5	14x1.5
		400	HD-EVGEO-12L-ME-16-W	12	18x1.5	16x1.5
			HD-EVGEO-15L-ME-18-W	15	22x1.5	18x1.5
			HD-EVGEO-18L-ME-22-W	18	26x1.5	22x1.5
		250	HD-EVGEO-22L-ME-26-W	22	30x2	26x1.5
			HD-EVGEO-28L-ME-33-W	28	36x2	33x2
			HD-EVGEO-35L-ME-42-W	35	45x2	42x2
			HD-EVGEO-42L-ME-48-W	42	52x2	48x2
	S	800	HD-EVGEO-06S-ME-12-W	6	14x1.5	12x1.5
			HD-EVGEO-08S-ME-14-W	8	16x1.5	14x1.5
			HD-EVGEO-10S-ME-16-W	10	18x1.5	16x1.5
		630	HD-EVGEO-12S-ME-18-W	12	20x1.5	18x1.5
			HD-EVGEO-16S-ME-22-W	16	24x1.5	22x1.5
			HD-EVGEO-20S-ME-27-W	20	30x2	27x2
		420	HD-EVGEO-25S-ME-33-W	25	36x2	33x2
			HD-EVGEO-30S-ME-42-W	30	42x2	42x2
		400	HD-EVGEO-38S-ME-48-W	38	52x2	48x2

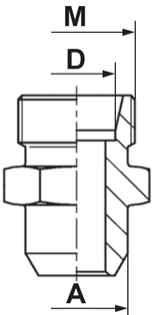
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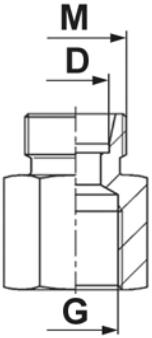
description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]	G [NPT]
Adjustable straight connector with NPT tapered thread  	L	250	HD-EVGEO-06L-NT-02-W	6	12x1.5	1/8
			HD-EVGEO-08L-NT-04-W	8	14x1.5	1/4
			HD-EVGEO-10L-NT-04-W	10	16x1.5	1/4
			HD-EVGEO-12L-NT-06-W	12	18x1.5	3/8
		160	HD-EVGEO-15L-NT-08-W	15	22x1.5	1/2
			HD-EVGEO-18L-NT-08-W	18	26x1.5	1/2
			HD-EVGEO-22L-NT-12-W	22	30x2	3/4
			HD-EVGEO-28L-NT-16-W	28	36x2	1
		100	HD-EVGEO-35L-NT-20-W	35	45x2	1.1/4
			HD-EVGEO-42L-NT-24-W	42	52x2	1.1/2
	S	630	HD-EVGEO-06S-NT-04-W	6	14x1.5	1/4
			HD-EVGEO-08S-NT-04-W	8	16x1.5	1/4
			HD-EVGEO-10S-NT-06-W	10	18x1.5	3/8
			HD-EVGEO-12S-NT-06-W	12	20x1.5	3/8
		400	HD-EVGEO-16S-NT-08-W	16	24x1.5	1/2
			HD-EVGEO-20S-NT-12-W	20	30x2	3/4
			HD-EVGEO-25S-NT-16-W	25	36x2	1
			HD-EVGEO-30S-NT-20-W	30	42x2	1.1/4
		250	HD-EVGEO-38S-NT-24-W	38	52x2	1.1/2

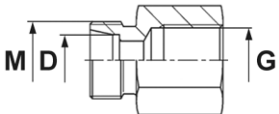
## EVGEO - NT

# HIGH PRESSURE - DIN 2353 connectors

## DIN 2353 Eaton Walterscheid™

description	series	press. [bar]	code (black steel)	D [mm]	M [mm]	A [mm]
Straight connector with weld-in ends   <b>AS</b>	L	500	HD-AS-06L-W	6	12x1.5	10
			HD-AS-08L-W	8	14x1.5	12
			HD-AS-10L-W	10	16x1.5	14
		400	HD-AS-12L-W	12	18x1.5	16
			HD-AS-15L-W	15	22x1.5	19
			HD-AS-18L-W	18	26x1.5	22
		250	HD-AS-22L-W	22	30x2	27
			HD-AS-28L-W	28	36x2	32
			HD-AS-35L-W	35	45x2	40
	S	800	HD-AS-42L-W	42	52x2	46
			HD-AS-06S-W	6	14x1.5	11
			HD-AS-08S-W	8	16x1.5	13
		630	HD-AS-10S-W	10	18x1.5	15
			HD-AS-12S-W	12	20x1.5	17
			HD-AS-16S-W	16	24x1.5	21
		420	HD-AS-20S-W	20	30x2	26
			HD-AS-25S-W	25	36x2	31
			HD-AS-30S-W	30	42x2	36
			HD-AS-38S-W	38	52x2	44

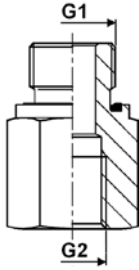
description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]	G [BSP]
Straight connector with BSP female thread   <b>GAI - B</b>	L	250	HD-GAI-06L-B-02-W	6	12x1.5	1/8
			HD-GAI-08L-B-04-W	8	14x1.5	1/4
			HD-GAI-10L-B-04-W	10	16x1.5	1/4
			HD-GAI-12L-B-04-W	12	18x1.5	1/4
			HD-GAI-12L-B-06-W	12	18x1.5	3/8
		160	HD-GAI-15L-B-08-W	15	22x1.5	1/2
			HD-GAI-18L-B-08-W	18	26x1.5	1/2
			HD-GAI-22L-B-12-W	22	30x2	3/4
	S	100	HD-GAI-28L-B-16-W	28	36x2	1
			HD-GAI-35L-B-20-W	35	45x2	1.1/4
			HD-GAI-42L-B-24-W	42	52x2	1.1/2
		630	HD-GAI-06S-B-04-W	6	14x1.5	1/4
			HD-GAI-08S-B-04-W	8	16x1.5	1/4
			HD-GAI-10S-B-06-W	10	18x1.5	3/8
		400	HD-GAI-12S-B-06-W	12	20x1.5	3/8
			HD-GAI-16S-B-08-W	16	24x1.5	1/2
			HD-GAI-20S-B-12-W	20	30x2	3/4
		250	HD-GAI-25S-B-16-W	25	36x2	1
			HD-GAI-30S-B-20-W	30	42x2	1.1/4
			HD-GAI-38S-B-24-W	38	52x2	1.1/2

description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]	G [mm]
Straight connector with metric female thread   <b>GAI - M</b>	L	250	HD-GAI-06L-M-10-W	6	12x1.5	10x1
			HD-GAI-08L-M-12-W	8	14x1.5	12x1.5
			HD-GAI-10L-M-14-W	10	16x1.5	14x1.5
			HD-GAI-12L-M-16-W	12	18x1.5	16x1.5
			HD-GAI-15L-M-18-W	15	22x1.5	18x1.5
		160	HD-GAI-18L-M-22-W	18	26x1.5	22x1.5
			HD-GAI-22L-M-26-W	22	30x2	26x1.5
	S	630	HD-GAI-06S-M-12-W	6	14x1.5	12x1.5
			HD-GAI-08S-M-14-W	8	16x1.5	14x1.5
			HD-GAI-10S-M-16-W	10	18x1.5	16x1.5
		400	HD-GAI-12S-M-18-W	12	20x1.5	18x1.5
			HD-GAI-16S-M-22-W	16	24x1.5	22x1.5
			HD-GAI-20S-M-27-W	20	30x2	27x2



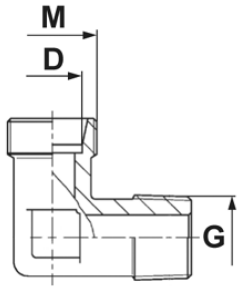
# HIGH PRESSURE - DIN 2353 connectors

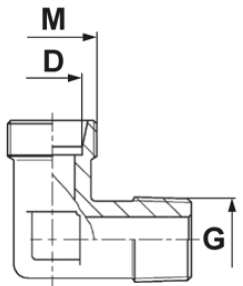
## DIN 2353 Eaton Walterscheid™

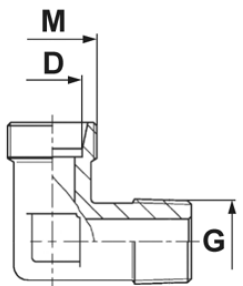
description	series	press. [bar]	code (galvanized steel)	G1 [BSP]	G2 [BSP]
Straight BSP (DIN 3852-E seal) connector with BSP female thread    <b>RI - BE</b>	-	400	HD-RI-02-04-BE-W	1/8	1/4
			HD-RI-02-06-BE-W	1/8	3/8
			HD-RI-04-02-BE-W	1/4	1/8
			HD-RI-04-06-BE-W	1/4	3/8
			HD-RI-04-08-BE-W	1/4	1/2
			HD-RI-04-12-BE-W	1/4	3/4
		630	HD-RI-06-02-BE-W	3/8	1/8
		400	HD-RI-06-04-BE-W	3/8	1/4
			HD-RI-06-08-BE-W	3/8	1/2
			HD-RI-06-12-BE-W	3/8	3/4
		630	HD-RI-08-02-BE-W	1/2	1/8
			HD-RI-08-04-BE-W	1/2	1/4
		400	HD-RI-08-06-BE-W	1/2	3/8
			HD-RI-08-12-BE-W	1/2	3/4
			HD-RI-08-16-BE-W	1/2	1
			HD-RI-12-04-BE-W	3/4	1/4
			HD-RI-12-06-BE-W	3/4	3/8
			HD-RI-12-08-BE-W	3/4	1/2
			HD-RI-12-16-BE-W	3/4	1
		250	HD-RI-12-20-BE-W	3/4	1.1/4
			HD-RI-12-24-BE-W	3/4	1.1/2
		400	HD-RI-16-04-BE-W	1	1/4
			HD-RI-16-06-BE-W	1	3/8
			HD-RI-16-08-BE-W	1	1/2
			HD-RI-16-12-BE-W	1	3/4
		250	HD-RI-16-20-BE-W	1	1.1/4
			HD-RI-16-24-BE-W	1	1.1/2
		400	HD-RI-20-08-BE-W	1.1/4	1/2
			HD-RI-20-12-BE-W	1.1/4	3/4
			HD-RI-20-16-BE-W	1.1/4	1
		250	HD-RI-20-24-BE-W	1.1/4	1.1/2
		400	HD-RI-24-08-BE-W	1.1/2	1/2
			HD-RI-24-12-BE-W	1.1/2	3/4
			HD-RI-24-16-BE-W	1.1/2	1
		250	HD-RI-24-20-BE-W	1.1/2	1.1/4

# HIGH PRESSURE - DIN 2353 connectors

## DIN 2353 Eaton Walterscheid™

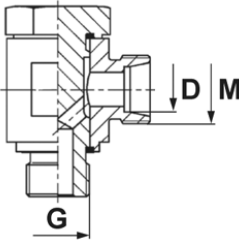
description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]	G [BSPT]
90° connector with BSPT tapered thread   <b>WE - BT</b>	LL	100	HD-WE-04LL-BT-02-W	4	8x1	1/8
			HD-WE-06LL-BT-02-W	6	10x1	1/8
			HD-WE-08LL-BT-02-W	8	12x1	1/8
	L	250	HD-WE-06L-BT-02-W	6	12x1.5	1/8
			HD-WE-06L-BT-04-W	6	12x1.5	1/4
			HD-WE-08L-BT-04-W	8	14x1.5	1/4
			HD-WE-10L-BT-04-W	10	16x1.5	1/4
			HD-WE-10L-BT-06-W	10	16x1.5	3/8
			HD-WE-12L-BT-04-W	12	18x1.5	1/4
			HD-WE-12L-BT-06-W	12	18x1.5	3/8
			HD-WE-15L-BT-08-W	15	22x1.5	1/2
	S	160	HD-WE-18L-BT-08-W	18	26x1.5	1/2
		630	HD-WE-06S-BT-04-W	6	14x1.5	1/4
			HD-WE-08S-BT-04-W	8	16x1.5	1/4
			HD-WE-10S-BT-06-W	10	18x1.5	3/8
			HD-WE-12S-BT-06-W	12	20x1.5	3/8
		400	HD-WE-16S-BT-08-W	16	24x1.5	1/2

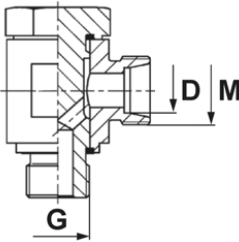
description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]	G [mm]
90° connector with metric tapered thread   <b>WE - MT</b>	LL	100	HD-WE-04LL-MT-08-W	4	8x1	8x1
			HD-WE-06LL-MT-10-W	6	10x1	10x1
			HD-WE-08LL-MT-10-W	8	12x1	10x1
	L	250	HD-WE-06L-MT-10-W	6	12x1.5	10x1
			HD-WE-08L-MT-12-W	8	14x1.5	12x1.5
			HD-WE-10L-MT-14-W	10	16x1.5	14x1.5
			HD-WE-12L-MT-16-W	12	18x1.5	16x1.5
			HD-WE-15L-MT-18-W	15	22x1.5	18x1.5
		160	HD-WE-18L-MT-22-W	18	26x1.5	22x1.5
	S	630	HD-WE-06S-MT-12-W	6	14x1.5	12x1.5
			HD-WE-08S-MT-14-W	8	16x1.5	14x1.5
			HD-WE-10S-MT-16-W	10	18x1.5	16x1.5
			HD-WE-12S-MT-18-W	12	20x1.5	18x1.5
		400	HD-WE-16S-MT-22-W	16	24x1.5	22x1.5

description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]	G [NPT]
90° connector with NPT tapered thread   <b>WE - NT</b>	LL	100	HD-WE-04LL-NT-02-W	4	8x1	1/8
			HD-WE-06LL-NT-02-W	6	10x1	1/8
			HD-WE-08LL-NT-02-W	8	12x1	1/8
	L	250	HD-WE-06L-NT-02-W	6	12x1.5	1/8
			HD-WE-08L-NT-04-W	8	14x1.5	1/4
			HD-WE-10L-NT-04-W	10	16x1.5	1/4
			HD-WE-12L-NT-04-W	12	18x1.5	1/4
			HD-WE-12L-NT-06-W	12	18x1.5	3/8
			HD-WE-15L-NT-08-W	15	22x1.5	1/2
		160	HD-WE-18L-NT-08-W	18	26x1.5	1/2
			HD-WE-22L-NT-12-W	22	30x2	3/4
	S	100	HD-WE-28L-NT-16-W	28	36x2	1
		630	HD-WE-06S-NT-04-W	6	14x1.5	1/4
			HD-WE-08S-NT-04-W	8	16x1.5	1/4
			HD-WE-10S-NT-06-W	10	18x1.5	3/8
			HD-WE-12S-NT-06-W	12	20x1.5	3/8
		400	HD-WE-16S-NT-08-W	16	24x1.5	1/2
			HD-WE-20S-NT-12-W	20	30x2	3/4
			HD-WE-25S-NT-16-W	25	36x2	1

# HIGH PRESSURE - DIN 2353 connectors

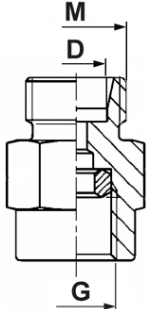
## DIN 2353 Eaton Walterscheid™

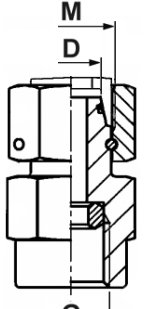
description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]	G [BSP]
BANJO connector with BSP thread, DIN 3852- E seal    <b>WH - BE</b>	LL	100	HD-WH-04LL-BE-02-W	4	8x1	1/8
			HD-WH-06LL-BE-02-W	6	10x1	1/8
			HD-WH-08LL-BE-02-W	8	12x1	1/8
	L	500	HD-WH-06L-BE-02-W	6	12x1.5	1/8
			HD-WH-06L-BE-04-W	6	12x1.5	1/4
			HD-WH-08L-BE-04-W	8	14x1.5	1/4
			HD-WH-10L-BE-04-W	10	16x1.5	1/4
			HD-WH-12L-BE-04-W	12	18x1.5	1/4
		400	HD-WH-12L-BE-06-W	12	18x1.5	3/8
			HD-WH-15L-BE-08-W	15	22x1.5	1/2
			HD-WH-18L-BE-08-W	18	26x1.5	1/2
		250	HD-WH-22L-BE-12-W	22	30x2	3/4
			HD-WH-28L-BE-16-W	28	36x2	1
			HD-WH-35L-BE-20-W	35	45x2	1.1/4
			HD-WH-42L-BE-24-W	42	52x2	1.1/2
		S	HD-WH-06S-BE-04-W	6	14x1.5	1/4
			HD-WH-08S-BE-04-W	8	16x1.5	1/4
			HD-WH-10S-BE-06-W	10	18x1.5	3/8
			HD-WH-12S-BE-06-W	12	20x1.5	3/8
			HD-WH-14S-BE-08-W	14	22x1.5	1/2
			HD-WH-16S-BE-08-W	16	24x1.5	1/2
			HD-WH-20S-BE-12-W	20	30x2	3/4
			HD-WH-25S-BE-16-W	25	36x2	1
			HD-WH-30S-BE-20-W	30	42x2	1.1/4
			HD-WH-38S-BE-24-W	38	52x2	1.1/2

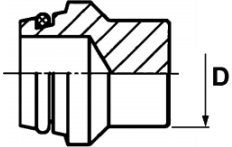
description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]	G [mm]
BANJO connector with metric thread, DIN 3852- E seal    <b>WH - ME</b>	LL	100	HD-WH-04LL-ME-08-W	4	8x1	8x1
			HD-WH-06LL-ME-10-W	6	10x1	10x1
			HD-WH-08LL-ME-10-W	8	12x1	10x1
	L	500	HD-WH-06L-ME-10-W	6	12x1.5	10x1
			HD-WH-08L-ME-12-W	8	14x1.5	12x1.5
			HD-WH-10L-ME-14-W	10	16x1.5	14x1.5
		400	HD-WH-12L-ME-16-W	12	18x1.5	16x1.5
			HD-WH-12L-ME-18-W	12	18x1.5	18x1.5
		400	HD-WH-15L-ME-18-W	15	22x1.5	18x1.5
			HD-WH-18L-ME-22-W	18	26x1.5	22x1.5
			HD-WH-22L-ME-26-W	22	30x2	26x1.5
		250	HD-WH-28L-ME-33-W	28	36x2	33x2
			HD-WH-35L-ME-42-W	35	45x2	42x2
			HD-WH-42L-ME-48-W	42	52x2	48x2
	S	500	HD-WH-06S-ME-12-W	6	14x1.5	12x1.5
			HD-WH-08S-ME-14-W	8	16x1.5	14x1.5
			HD-WH-10S-ME-16-W	10	18x1.5	16x1.5
		400	HD-WH-12S-ME-18-W	12	20x1.5	18x1.5
			HD-WH-16S-ME-22-W	16	24x1.5	22x1.5
			HD-WH-20S-ME-27-W	20	30x2	27x2
		250	HD-WH-25S-ME-33-W	25	36x2	33x2
			HD-WH-30S-ME-42-W	30	42x2	42x2
			HD-WH-38S-ME-48-W	38	52x2	48x2

# HIGH PRESSURE - DIN 2353 connectors

## DIN 2353 Eaton Walterscheid™

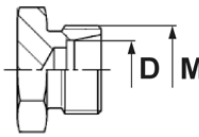
description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]	G [BSP]
Pressure gauge connector with BSP thread   <b>MAV - B</b>	L	500	HD-MAV-06L-B-04-W	6	12x1.5	1/4
			HD-MAV-08L-B-04-W	8	14x1.5	1/4
			HD-MAV-10L-B-04-W	10	16x1.5	1/4
	S	400	HD-MAV-12L-B-04-W	12	18x1.5	1/4
		800	HD-MAV-06S-B-08-W	6	14x1.5	1/2
			HD-MAV-08S-B-08-W	8	16x1.5	1/2
			HD-MAV-10S-B-08-W	10	18x1.5	1/2
		630	HD-MAV-12S-B-08-W	12	20x1.5	1/2

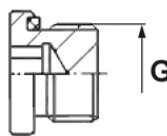
description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]	G [BSP]
Pressure gauge connector with BSP thread   <b>FAV - B</b>	L	500	HD-FAV-06L-B-04-W	6	12x1.5	1/4
			HD-FAV-08L-B-04-W	8	14x1.5	1/4
			HD-FAV-10L-B-04-W	10	16x1.5	1/4
	S	400	HD-FAV-12L-B-04-W	12	18x1.5	1/4
		630	HD-FAV-06S-B-08-W	6	14x1.5	1/2
			HD-FAV-08S-B-08-W	8	16x1.5	1/2
			HD-FAV-10S-B-08-W	10	18x1.5	1/2
			HD-FAV-12S-B-08-W	12	20x1.5	1/2

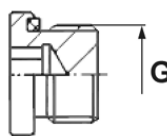
description	series	press. [bar]	code (galvanized steel)	D [mm]
Dust plug   <b>VKA</b>	LL	100	HD-VKA-04LL-W	4
			HD-VKA-06LL-W	6
			HD-VKA-08LL-W	8
	L/S	800	HD-VKA-06L-S-W	6
			HD-VKA-08L-S-W	8
			HD-VKA-10L-S-W	10
	L	630	HD-VKA-12L-S-W	12
		400	HD-VKA-15L-W	15
			HD-VKA-18L-W	18
		250	HD-VKA-22L-W	22
			HD-VKA-28L-W	29
			HD-VKA-35L-W	35
			HD-VKA-42L-W	42
			HD-VKA-16S-W	16
	S	420	HD-VKA-20S-W	20
			HD-VKA-25S-W	25
			HD-VKA-30S-W	30
			HD-VKA-38S-W	38

# HIGH PRESSURE - DIN 2353 connectors

## DIN 2353 Eaton Walterscheid™

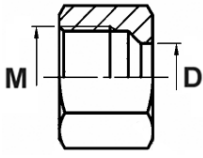
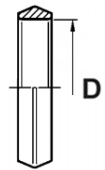
description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]
Dust cap    <b>ROV</b>	L	500	HD-ROV-06L-W	6	12x1.5
			HD-ROV-08L-W	8	14x1.5
			HD-ROV-10L-W	10	16x1.5
		400	HD-ROV-12L-W	12	18x1.5
			HD-ROV-15L-W	15	22x1.5
			HD-ROV-18L-W	18	26x1.5
		250	HD-ROV-22L-W	22	30x2
			HD-ROV-28L-W	28	36x2
			HD-ROV-35L-W	35	45x2
	S	800	HD-ROV-42L-W	42	52x2
			HD-ROV-06S-W	6	14x1.5
			HD-ROV-08S-W	8	16x1.5
		630	HD-ROV-10S-W	10	18x1.5
			HD-ROV-12S-W	12	20x1.5
			HD-ROV-16S-W	16	24x1.5
		420	HD-ROV-20S-W	20	30x2
			HD-ROV-25S-W	25	36x2
			HD-ROV-30S-W	30	42x2
			HD-ROV-38S-W	38	52x2

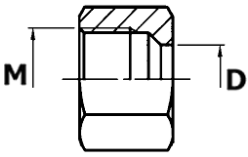
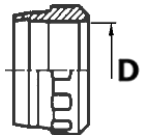
description	series	press. [bar]	code (galvanized steel)	G [BSP]
Dust cap with BSP thread, DIN 3852-E seal    <b>VSTI - BE</b>	-	400	HD-VSTI-02-BE-W	1/8
			HD-VSTI-04-BE-W	1/4
			HD-VSTI-06-BE-W	3/8
			HD-VSTI-08-BE-W	1/2
			HD-VSTI-12-BE-W	3/4
			HD-VSTI-16-BE-W	1
	-	250	HD-VSTI-20-BE-W	1.1/4
			HD-VSTI-24-BE-W	1.1/2
	-	400	HD-VSTI-H-20-BE-W	1.1/4
			HD-VSTI-H-24-BE-W	1.1/2

description	series	press. [bar]	code (galvanized steel)	G [mm]
Dust cap with metric thread, DIN 3852-E seal    <b>VSTI - ME</b>	-	400	HD-VSTI-10-ME-W	10x1
			HD-VSTI-12-ME-W	12x1.5
			HD-VSTI-14-ME-W	14x1.5
			HD-VSTI-16-ME-W	16x1.5
			HD-VSTI-18-ME-W	18x1.5
			HD-VSTI-20-ME-W	20x1.5
			HD-VSTI-22-ME-W	22x1.5
			HD-VSTI-26-ME-W	26x1.5
			HD-VSTI-27-ME-W	27x2
			HD-VSTI-33-ME-W	33x2
		250	HD-VSTI-42-ME-W	42x2
			HD-VSTI-48-ME-W	48x2
		400	HD-VSTI-H-42-ME-W	42x2
			HD-VSTI-H-48-ME-W	48x2

# HIGH PRESSURE - DIN 2353 connectors

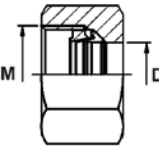

## DIN 2353 Eaton Walterscheid™

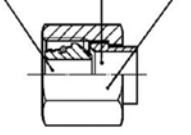
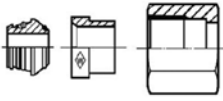
description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]
<b>WALForm nut with seal</b>      <b>MWF</b>	L	500	HD-MWF-06L-W	6	12x1.5
			HD-MWF-08L-W	8	14x1.5
			HD-MWF-10L-W	10	16x1.5
		400	HD-MWF-12L-W	12	18x1.5
			HD-MWF-15L-W	15	22x1.5
			HD-MWF-18L-W	18	26x1.5
		250	HD-MWF-22L-W	22	30x2
			HD-MWF-28L-W	28	36x2
			HD-MWF-35L-W	35	45x2
	S	800	HD-MWF-42L-W	42	52x2
			HD-MWF-06S-W	6	14x1.5
			HD-MWF-08S-W	8	16x1.5
		630	HD-MWF-10S-W	10	18x1.5
			HD-MWF-12S-W	12	20x1.5
			HD-MWF-16S-W	16	24x1.5
		420	HD-MWF-20S-W	20	30x2
			HD-MWF-25S-W	25	36x2
			HD-MWF-30S-W	30	42x2
			HD-MWF-38S-W	38	52x2

description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]
<b>WALPro nut with cutting ring</b>      <b>MWP</b>	LL	100	HD-MWP-04LL-W	4	8x1
			HD-MWP-06LL-W	6	10x1
			HD-MWP-08LL-W	8	12x1
	L	500	HD-MWP-06L-W	6	12x1.5
			HD-MWP-08L-W	8	14x1.5
			HD-MWP-10L-W	10	16x1.5
		400	HD-MWP-12L-W	12	18x1.5
			HD-MWP-15L-W	15	22x1.5
			HD-MWP-18L-W	18	26x1.5
		250	HD-MWP-22L-W	22	30x2
			HD-MWP-28L-W	28	36x2
			HD-MWP-35L-W	35	45x2
	S	800	HD-MWP-42L-W	42	52x2
			HD-MWP-06S-W	6	14x1.5
			HD-MWP-08S-W	8	16x1.5
		630	HD-MWP-10S-W	10	18x1.5
			HD-MWP-12S-W	12	20x1.5
			HD-MWP-14S-W	14	22x1.5
		420	HD-MWP-16S-W	16	24x1.5
			HD-MWP-20S-W	20	30x2
			HD-MWP-25S-W	25	36x2
			HD-MWP-30S-W	30	42x2
			HD-MWP-38S-W	38	52x2

# HIGH PRESSURE - DIN 2353 connectors

## DIN 2353 Eaton Walterscheid™

description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]
<p>WALRing nut with cutting ring</p>   <p><b>MWR</b></p>	L	500	HD-MWR-06L-W	6	12x1.5
			HD-MWR-08L-W	8	14x1.5
			HD-MWR-10L-W	10	16x1.5
		400	HD-MWR-12L-W	12	18x1.5
			HD-MWR-15L-W	15	22x1.5
			HD-MWR-18L-W	18	26x1.5
		250	HD-MWR-22L-W	22	30x2
			HD-MWR-28L-W	28	36x2
			HD-MWR-35L-W	35	45x2
	S	800	HD-MWR-42L-W	42	52x2
			HD-MWR-06S-W	6	14x1.5
			HD-MWR-08S-W	8	16x1.5
		630	HD-MWR-10S-W	10	18x1.5
			HD-MWR-12S-W	12	20x1.5
			HD-MWR-16S-W	16	24x1.5
		420	HD-MWR-20S-W	20	30x2
			HD-MWR-25S-W	25	36x2
			HD-MWR-30S-W	30	42x2
			HD-MWR-38S-W	38	52x2

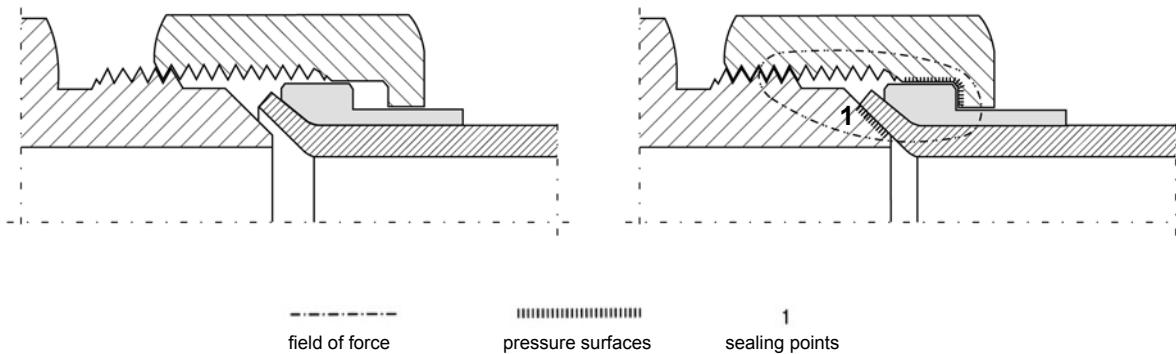
description	series	press. [bar]	code (galvanized steel)	D [mm]	M [mm]
<p>DIN2353/JIC connector + nut with metric thread + JIC ferrule O-ring seal</p> <p>connector JIC cone 24°/74°   JIC ferrule   nut</p>   <p><b>HJ</b></p>	L	500	HD-HJ-06L-W	6	12x1.5
			HD-HJ-08L-W	8	14x1.5
			HD-HJ-10L-W	10	16x1.5
		400	HD-HJ-12L-W	12	18x1.5
			HD-HJ-15L-W	15	22x1.5
			HD-HJ-18L-W	18	26x1.5
		250	HD-HJ-22L-W	22	30x2
			HD-HJ-28L-W	28	36x2
			HD-HJ-35L-W	35	45x2
	S	800	HD-HJ-42L-W	42	52x2
			HD-HJ-06S-W	6	14x1.5
			HD-HJ-08S-W	8	16x1.5
		630	HD-HJ-10S-W	10	18x1.5
			HD-HJ-12S-W	12	20x1.5
			HD-HJ-16S-W	16	24x1.5
		400	HD-HJ-20S-W	20	30x2
			HD-HJ-25S-W	25	36x2
			HD-HJ-30S-W	30	42x2
			HD-HJ-38S-W	38	52x2

## HIGH PRESSURE - JIC 37° connectors

### SAE fittings - J514 (JIC 37°)

Fittings manufactured according to SAE J514 (ISO 8434-2) standard are widely used in many branches of industry to connect steel pipes with outside diameter from 6 to 38 mm. Fittings according to SAE J514 can also be used to connect flexible hose assemblies. Widely used in hydraulic and pneumatic drive and control systems as well as in industrial applications.

#### Operation principle of JIC 37°



The pipes that are to be connected with JIC 37° fittings, must be flared with a flaring machine (hand tools must not be used). The connection of a fitting with a flared steel pipe with 74° angle cone ( $37^\circ \times 2 = 74^\circ$ ) is obtained by a ferrule in a tightening nut. The flared 37° part of the pipe couples with the conical 37° part of the fitting body assuring metal to metal seal. Fittings with elastomeric sealing (O-ring) are available as well. The fittings according to JIC 37° may also be connected with JIC type fittings (e.g. TI-ZJW110, TI-ZJZ110) of flexible hydraulic hose assemblies.

#### Technical characteristics

##### Material:

Zinc-plated carbon steel, stainless steel (AISI 316Ti).

##### Working pressure:

Depends on the size and type of a fitting. The working pressure of the fitting given in the table is its max. working pressure (including temporary pressure build-up). Safety factor 4:1 (calculated for static pressure), for a connection of the fitting with a pipe or for fittings with elastomeric sealing. For fittings with taper thread or with metal to metal seal, the safety factor is 2.5:1.

##### Working temperature:

- for carbon steel fittings: from  $-20^\circ\text{C}$  up to  $+120^\circ\text{C}$
- for stainless steel fittings: from  $-60^\circ\text{C}$  up to  $+200^\circ\text{C}$

For temperatures above  $+100^\circ\text{C}$ , the max. working pressure may require reduction.

##### Sealing:

NBR seals are used for carbon steel fittings, Viton (FPM) seals for stainless steel fittings as a standard. Working temperature range of the seals:

- NBR from  $-35^\circ\text{C}$  up to  $+100^\circ\text{C}$ ,
- Viton (FPM) from  $-25^\circ\text{C}$  up to  $+200^\circ\text{C}$ .

##### Fluid being transferred:

Fittings according to JIC 37° can be used to transfer a wide range of fluids and gases. However, the compatibility of the medium with fitting material and seal type must be always checked. For all applications different from standard hydraulic oils, please contact TUBES INTERNATIONAL® Technical Department.

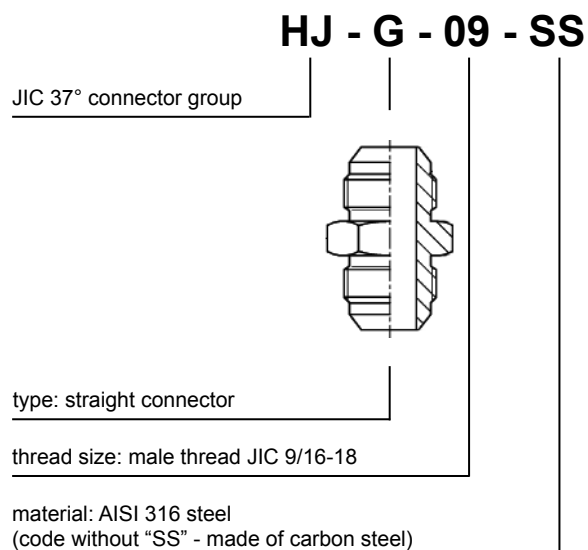


## HIGH PRESSURE - JIC 37° connectors

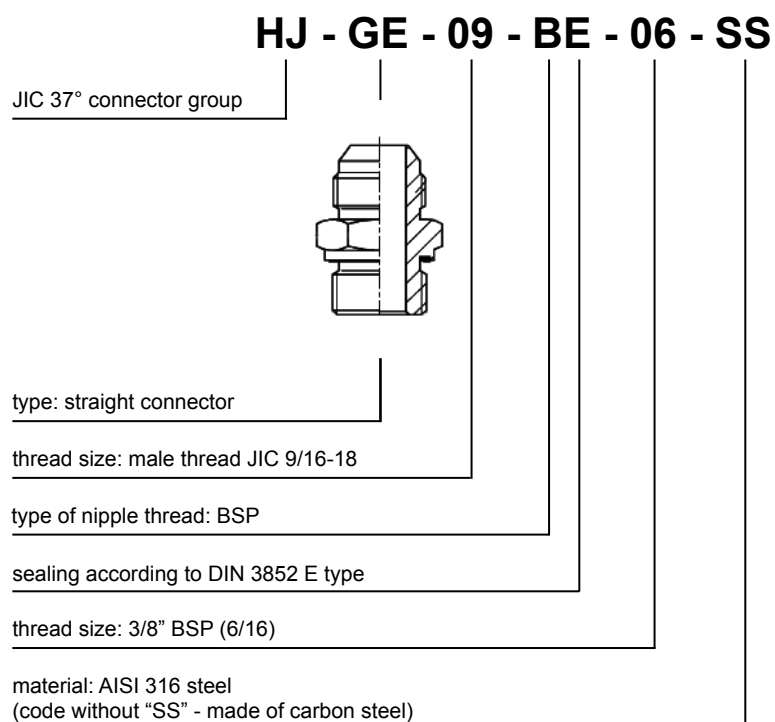
### Codes of connectors in the catalogue

Connectors are marked with special codes in our catalogue - they should be used when placing an order.

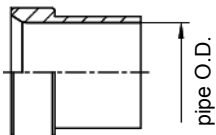
#### Code example:



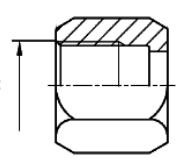
#### Code example:



## HIGH PRESSURE - JIC 37° connectors

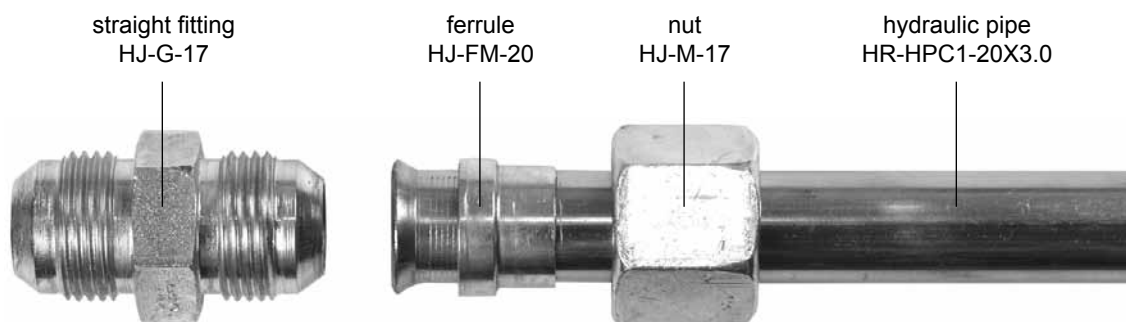
description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.	
				[mm]	[inch]
<b>Ferrule</b>  	450	HJ-FM-06	HJ-FM-06-SS	6	-
		HJ-FC-04	HJ-FC-04-SS	-	1/4
		HJ-FM-08	HJ-FM-08-SS	8	-
			HJ-FC-05-SS	-	5/16
	350	HJ-FM-10	HJ-FM-10-SS	10	-
		HJ-FC-06	HJ-FC-06-SS	-	3/8
		HJ-FM-12	HJ-FM-12-SS	12	-
		HJ-FC-08	HJ-FC-08-SS	-	1/2
		HJ-FM-16	HJ-FM-16-SS	16	-
			HJ-FC-10-SS	-	5/8
		HJ-FM-20	HJ-FM-20-SS	20	-
		HJ-FC-12	HJ-FC-12-SS	-	3/4
	290	HJ-FM-25	HJ-FM-25-SS	25	-
	240	HJ-FC-16	HJ-FC-16-SS	-	1
		HJ-FM-32	HJ-FM-32-SS	32	-
		HJ-FC-20	HJ-FC-20-SS	-	1.1/4
		HJ-FM-38	HJ-FM-38-SS	38	-
			HJ-FC-24-SS	-	1.1/2
	350	HJ-FM-14	HJ-FM-14-SS	14	-
		HJ-FM-15	HJ-FM-15-SS	15	-
		HJ-FM-18	HJ-FM-18-SS	18	-
	240	HJ-FM-30	HJ-FM-30-SS	30	-

**FM**  
**FC**

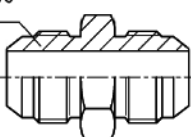
description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC [UN-UNF]
				[mm]	[inch]	
<b>Nut</b>  	450	HJ-M-07	HJ-M-07-SS	6	1/4	7/16-20
		HJ-M-08	HJ-M-08-SS	8	5/16	1/2-20
	350	HJ-M-09	HJ-M-09-SS	10	3/8	9/16-18
		HJ-M-12	HJ-M-12-SS	12	1/2	3/4-16
		HJ-M-14	HJ-M-14-SS	14-15-16	5/8	7/8-14
		HJ-M-17	HJ-M-17-SS	18-20	3/4	1.1/16-12
	290	HJ-M-21	HJ-M-21-SS	25	1	1.5/16-12
	240	HJ-M-26	HJ-M-26-SS	30-32	1.1/4	1.5/8-12
		HJ-M-30	HJ-M-30-SS	38	1.1/2	1.7/8-12

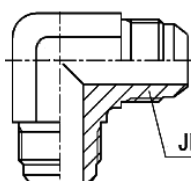
**M**

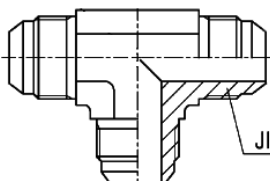
Example of a set for JIC37° fitting connection with seamless hydraulic precision pipe

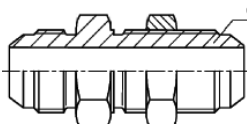


## HIGH PRESSURE - JIC 37° connectors

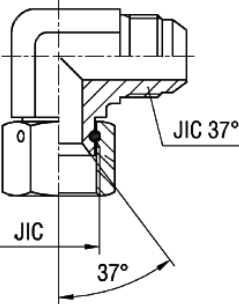
description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.				JIC 37° [UN-UNF]	
				[mm]		[inch]		A	B
				A	B	A	B		
<b>Straight connector</b>    <b>G GR</b>	450	HJ-G-07	HJ-G-07-SS	6	6	1/4	1/4	7/16-20	7/16-20
		HJ-G-08	HJ-G-08-SS	8	8	5/16	5/16	1/2-20	1/2-20
	350	HJ-G-09	HJ-G-09-SS	10	10	3/8	3/8	9/16-18	9/16-18
		HJ-G-12	HJ-G-12-SS	12	12	1/2	1/2	3/4-16	3/4-16
		HJ-G-14	HJ-G-14-SS	14-15-16	14-15-16	5/8	5/8	7/8-14	7/8-14
	290	HJ-G-17	HJ-G-17-SS	18-20	18-20	3/4	3/4	1.1/16-12	1.1/16-12
		HJ-G-21	HJ-G-21-SS	25	25	1	1	1.5/16-12	1.5/16-12
	240	HJ-G-26	HJ-G-26-SS	30-32	30-32	1.1/4	1.1/4	1.5/8-12	1.5/8-12
		HJ-G-30	HJ-G-30-SS	38	38	1.1/2	1.1/2	1.7/8-12	1.7/8-12
	350	HJ-GR-09-07	-	10	6	3/8	1/4	9/16-18	7/16-20
		HJ-GR-12-09	-	12	10	1/2	3/8	3/4-16	9/16-18
		HJ-GR-14-12	-	14-15-16	12	5/8	1/2	7/8-14	3/4-16
		HJ-GR-17-12	-	18-20	12	3/4	1/2	1.1/16-12	3/4-16
		HJ-GR-17-14	-	18-20	14-15-16	3/4	5/8	1.1/16-12	7/8-14
	290	HJ-GR-21-17	-	25	18-20	1	3/4	1.5/16-12	1.1/16-12

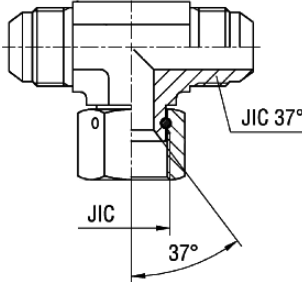
description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]
				[mm]	[inch]	
<b>90° elbow connector</b>    <b>W</b>	450	HJ-W-07	HJ-W-07-SS	6	1/4	7/16-20
		HJ-W-08	HJ-W-08-SS	8	5/16	1/2-20
	350	HJ-W-09	HJ-W-09-SS	10	3/8	9/16-18
		HJ-W-12	HJ-W-12-SS	12	1/2	3/4-16
		HJ-W-14	HJ-W-14-SS	14-15-16	5/8	7/8-14
	290	HJ-W-17	HJ-W-17-SS	18-20	3/4	1.1/16-12
		HJ-W-21	HJ-W-21-SS	25	1	1.5/16-12
	240	HJ-W-26	HJ-W-26-SS	30-32	1.1/4	1.5/8-12
		HJ-W-30	HJ-W-30-SS	38	1.1/2	1.7/8-12

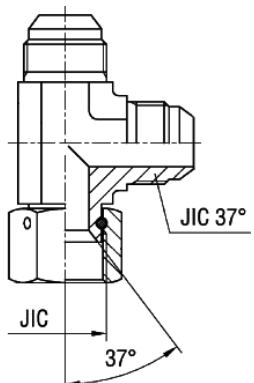
description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]
				[mm]	[inch]	
<b>Tee connector</b>    <b>T</b>	450	HJ-T-07	HJ-T-07-SS	6	1/4	7/16-20
		HJ-T-08	HJ-T-08-SS	8	5/16	1/2-20
	350	HJ-T-09	HJ-T-09-SS	10	3/8	9/16-18
		HJ-T-12	HJ-T-12-SS	12	1/2	3/4-16
		HJ-T-14	HJ-T-14-SS	14-15-16	5/8	7/8-14
	290	HJ-T-17	HJ-T-17-SS	18-20	3/4	1.1/16-12
		HJ-T-21	HJ-T-21-SS	25	1	1.5/16-12
	240	HJ-T-26	HJ-T-26-SS	30-32	1.1/4	1.5/8-12
		HJ-T-30	HJ-T-30-SS	38	1.1/2	1.7/8-12

description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]
				[mm]	[inch]	
<b>Straight bulkhead connector</b>    <b>SV</b>	450	HJ-SV-07	HJ-SV-07-SS	6	1/4	7/16-20
		HJ-SV-08	HJ-SV-08-SS	8	5/16	1/2-20
	350	HJ-SV-09	HJ-SV-09-SS	10	3/8	9/16-18
		HJ-SV-12	HJ-SV-12-SS	12	1/2	3/4-16
		HJ-SV-14	HJ-SV-14-SS	14-15-16	5/8	7/8-14
	290	HJ-SV-17	HJ-SV-17-SS	18-20	3/4	1.1/16-12
		HJ-SV-21	HJ-SV-21-SS	25	1	1.5/16-12
	240	HJ-SV-26	HJ-SV-26-SS	30-32	1.1/4	1.5/8-12
		HJ-SV-30	HJ-SV-30-SS	38	1.1/2	1.7/8-12

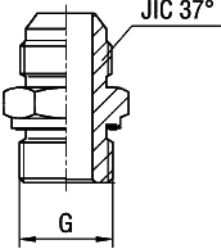
## HIGH PRESSURE - JIC 37° connectors

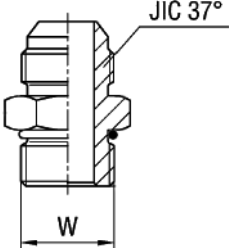
description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]
				[mm]	[inch]	
Adjustable 90° elbow connector  <b>EVW</b>	450	HJ-EVW-07	HJ-EVW-07-SS	6	1/4	7/16-20
		HJ-EVW-08	HJ-EVW-08-SS	8	5/16	1/2-20
	350	HJ-EVW-09	HJ-EVW-09-SS	10	3/8	9/16-18
		HJ-EVW-12	HJ-EVW-12-SS	12	1/2	3/4-16
		HJ-EVW-14	HJ-EVW-14-SS	14-15-16	5/8	7/8-14
		HJ-EVW-17	HJ-EVW-17-SS	18-20	3/4	1.1/16-12
	290	HJ-EVW-21	HJ-EVW-21-SS	25	1	1.5/16-12
	240	HJ-EVW-26	HJ-EVW-26-SS	30-32	1.1/4	1.5/8-12
		HJ-EVW-30	HJ-EVW-30-SS	38	1.1/2	1.7/8-12

description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]
				[mm]	[inch]	
Adjustable tee connector  <b>EVT</b>	450	HJ-EVT-07	HJ-EVT-07-SS	6	1/4	7/16-20
		HJ-EVT-08	HJ-EVT-08-SS	8	5/16	1/2-20
	350	HJ-EVT-09	HJ-EVT-09-SS	10	3/8	9/16-18
		HJ-EVT-12	HJ-EVT-12-SS	12	1/2	3/4-16
		HJ-EVT-14	HJ-EVT-14-SS	14-15-16	5/8	7/8-14
		HJ-EVT-17	HJ-EVT-17-SS	18-20	3/4	1.1/16-12
	290	HJ-EVT-21	HJ-EVT-21-SS	25	1	1.5/16-12
	240	HJ-EVT-26	HJ-EVT-26-SS	30-32	1.1/4	1.5/8-12
		HJ-EVT-30	HJ-EVT-30-SS	38	1.1/2	1.7/8-12

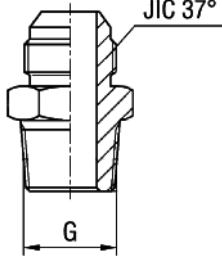
description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]
				[mm]	[inch]	
Adjustable tee connector (asymmetric)  <b>EVL</b>	450	HJ-EVL-07	HJ-EVL-07-SS	6	1/4	7/16-20
		HJ-EVL-08	HJ-EVL-08-SS	8	5/16	1/2-20
	350	HJ-EVL-09	HJ-EVL-09-SS	10	3/8	9/16-18
		HJ-EVL-12	HJ-EVL-12-SS	12	1/2	3/4-16
		HJ-EVL-14	HJ-EVL-14-SS	14-15-16	5/8	7/8-14
		HJ-EVL-17	HJ-EVL-17-SS	18-20	3/4	1.1/16-12
	290	HJ-EVL-21	HJ-EVL-21-SS	25	1	1.5/16-12
	240	HJ-EVL-26	HJ-EVL-26-SS	30-32	1.1/4	1.5/8-12
		HJ-EVL-30	HJ-EVL-30-SS	38	1.1/2	1.7/8-12

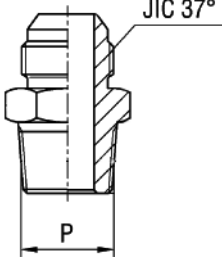
# HIGH PRESSURE - JIC 37° connectors

description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]	G [BSP]
				[mm]	[inch]		
Straight nipple, BSP thread   <b>GE - BE</b>	350	HJ-GE-07-BE-02	HJ-GE-07-BE-02-SS	6	1/4	7/16-20	1/8
		HJ-GE-08-BE-02	HJ-GE-08-BE-02-SS	8	5/16	1/2-20	1/8
		HJ-GE-09-BE-04	HJ-GE-09-BE-04-SS	10	3/8	9/16-18	1/4
		HJ-GE-12-BE-06	HJ-GE-12-BE-06-SS	12	1/2	3/4-16	3/8
		HJ-GE-14-BE-08	HJ-GE-14-BE-08-SS	14-15-16	5/8	7/8-14	1/2
	290	HJ-GE-17-BE-12	HJ-GE-17-BE-12-SS	18-20	3/4	1.1/16-12	3/4
		HJ-GE-21-BE-16	HJ-GE-21-BE-16-SS	25	1	1.5/16-12	1
	240	HJ-GE-26-BE-20	HJ-GE-26-BE-20-SS	30-32	1.1/4	1.5/8-12	1.1/4
		HJ-GE-30-BE-24	HJ-GE-30-BE-24-SS	38	1.1/2	1.7/8-12	1.1/2
	350	HJ-GE-07-BE-04	HJ-GE-07-BE-04-SS	6	1/4	7/16-20	1/4
		HJ-GE-07-BE-06	-	6	1/4	7/16-20	3/8
		HJ-GE-07-BE-08	HJ-GE-07-BE-08-SS	6	1/4	7/16-20	1/2
		HJ-GE-08-BE-04	HJ-GE-08-BE-04-SS	8	5/16	1/2-20	1/4
		HJ-GE-08-BE-06	HJ-GE-08-BE-06-SS	8	5/16	1/2-20	3/8
		HJ-GE-09-BE-02	HJ-GE-09-BE-02-SS	10	3/8	9/16-18	1/8
		HJ-GE-09-BE-06	HJ-GE-09-BE-06-SS	10	3/8	9/16-18	3/8
		HJ-GE-09-BE-08	HJ-GE-09-BE-08-SS	10	3/8	9/16-18	1/2
		HJ-GE-12-BE-04	HJ-GE-12-BE-04-SS	12	1/2	3/4-16	1/4
		HJ-GE-12-BE-08	HJ-GE-12-BE-08-SS	12	1/2	3/4-16	1/2
		HJ-GE-12-BE-12	HJ-GE-12-BE-12-SS	12	1/2	3/4-16	3/4
		HJ-GE-14-BE-06	HJ-GE-14-BE-06-SS	14-15-16	5/8	7/8-14	3/8
		HJ-GE-14-BE-12	HJ-GE-14-BE-12-SS	14-15-16	5/8	7/8-14	3/4
		HJ-GE-17-BE-06	-	18-20	3/4	1.1/16-12	3/8
		HJ-GE-17-BE-08	HJ-GE-17-BE-08-SS	18-20	3/4	1.1/16-12	1/2
	290	HJ-GE-17-BE-16	HJ-GE-17-BE-16-SS	18-20	3/4	1.1/16-12	1
		HJ-GE-21-BE-12	HJ-GE-21-BE-12-SS	25	1	1.5/16-12	3/4
	240	HJ-GE-21-BE-20	HJ-GE-21-BE-20-SS	25	1	1.5/16-12	1.1/4
		HJ-GE-26-BE-16	HJ-GE-26-BE-16-SS	30-32	1.1/4	1.5/8-12	1
		HJ-GE-26-BE-24	HJ-GE-26-BE-24-SS	30-32	1.1/4	1.5/8-12	1.1/2
		HJ-GE-30-BE-20	HJ-GE-30-BE-20-SS	38	1.1/2	1.7/8-12	1.1/4

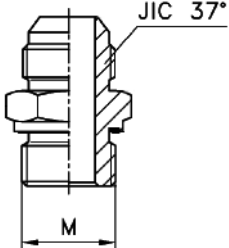
description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]	W [UN-UNF]
				[mm]	[inch]		
Straight nipple, UN-UNF thread   <b>GE - UN</b>	400	HJ-GE-07-UN-07	HJ-GE-07-UN-07-SS	6	1/4	7/16-20	7/16-20
		HJ-GE-08-UN-08	HJ-GE-08-UN-08-SS	8	5/16	1/2-20	1/2-20
	350	HJ-GE-09-UN-09	HJ-GE-09-UN-09-SS	10	3/8	9/16-18	9/16-18
		HJ-GE-12-UN-12	HJ-GE-12-UN-12-SS	12	1/2	3/4-16	3/4-16
		HJ-GE-14-UN-14	HJ-GE-14-UN-14-SS	14-15-16	5/8	7/8-14	7/8-14
	290	HJ-GE-17-UN-17	HJ-GE-17-UN-17-SS	18-20	3/4	1.1/16-12	1.1/16-12
		HJ-GE-21-UN-21	HJ-GE-21-UN-21-SS	25	1	1.5/16-12	1.5/16-12
	240	HJ-GE-26-UN-26	-	30-32	1.1/4	1.5/8-12	1.5/8-12
		HJ-GE-30-UN-30	-	38	1.1/2	1.7/8-12	1.7/8-12
	400	HJ-GE-07-UN-08	-	6	1/4	7/16-20	1/2-20
		HJ-GE-07-UN-09	-	6	1/4	7/16-20	9/16-18
		HJ-GE-07-UN-12	-	6	1/4	7/16-20	3/4-16
		HJ-GE-08-UN-09	-	8	5/16	1/2-20	9/16-18
		HJ-GE-09-UN-07	-	10	3/8	9/16-18	7/16-20
		HJ-GE-09-UN-08	-	10	3/8	9/16-18	1/2-20
		HJ-GE-09-UN-12	-	10	3/8	9/16-18	3/4-16
		HJ-GE-09-UN-14	-	10	3/8	9/16-18	7/8-14
		HJ-GE-12-UN-09	-	12	1/2	3/4-16	9/16-18
		HJ-GE-12-UN-14	-	12	1/2	3/4-16	7/8-14
		HJ-GE-12-UN-17	-	12	1/2	3/4-16	1.1/16-12
		HJ-GE-14-UN-12	-	14-15-16	5/8	7/8-14	3/4-16
		HJ-GE-14-UN-17	-	14-15-16	5/8	7/8-14	1.1/16-12
		HJ-GE-17-UN-12	-	18-20	3/4	1.1/16-12	3/4-16
		HJ-GE-17-UN-14	-	18-20	3/4	1.1/16-12	7/8-14
	290	HJ-GE-17-UN-21	-	18-20	3/4	1.1/16-12	1.5/16-12
		HJ-GE-21-UN-14	-	25	1	1.5/16-12	7/8-14
		HJ-GE-21-UN-17	-	25	1	1.5/16-12	1.1/16-12
	240	HJ-GE-21-UN-26	-	25	1	1.5/16-12	1.5/8-12
		HJ-GE-26-UN-21	-	30-32	1.1/4	1.5/8-12	1.5/16-12
		HJ-GE-30-UN-26	-	38	1.1/2	1.7/8-12	1.5/8-12

# HIGH PRESSURE - JIC 37° connectors

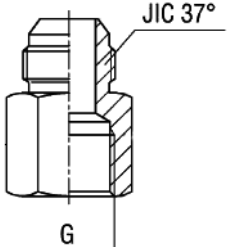
description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]	G [BSPT]
				[mm]	[inch]		
Straight nipple, BSPT (taper) thread    <b>GE - BT</b>	350	HJ-GE-07-BT-02	HJ-GE-07-BT-02-SS	6	1/4	7/16-20	1/8
		HJ-GE-08-BT-02	HJ-GE-08-BT-02-SS	8	5/16	1/2-20	1/8
		HJ-GE-09-BT-04	HJ-GE-09-BT-04-SS	10	3/8	9/16-18	1/4
		HJ-GE-12-BT-06	HJ-GE-12-BT-06-SS	12	1/2	3/4-16	3/8
		HJ-GE-14-BT-08	HJ-GE-14-BT-08-SS	14-15-16	5/8	7/8-14	1/2
		HJ-GE-17-BT-12	HJ-GE-17-BT-12-SS	18-20	3/4	1.1/16-12	3/4
	290	HJ-GE-21-BT-16	HJ-GE-21-BT-16-SS	25	1	1.5/16-12	1
	240	HJ-GE-26-BT-20	HJ-GE-26-BT-20-SS	30-32	1.1/4	1.5/8-12	1.1/4
		HJ-GE-30-BT-24	HJ-GE-30-BT-24-SS	38	1.1/2	1.7/8-12	1.1/2
	350	HJ-GE-07-BT-04	HJ-GE-07-BT-04-SS	6	1/4	7/16-20	1/4
		HJ-GE-08-BT-04	HJ-GE-08-BT-04-SS	8	5/16	1/2-20	1/4
		HJ-GE-09-BT-02	HJ-GE-09-BT-02-SS	10	3/8	9/16-18	1/8
		HJ-GE-09-BT-06	HJ-GE-09-BT-06-SS	10	3/8	9/16-18	3/8
		HJ-GE-09-BT-08	HJ-GE-09-BT-08-SS	10	3/8	9/16-18	1/2
		HJ-GE-12-BT-04	HJ-GE-12-BT-04-SS	12	1/2	3/4-16	1/4
		HJ-GE-12-BT-08	HJ-GE-12-BT-08-SS	12	1/2	3/4-16	1/2
		HJ-GE-12-BT-12	HJ-GE-12-BT-12-SS	12	1/2	3/4-16	3/4
		HJ-GE-14-BT-06	HJ-GE-14-BT-06-SS	14-15-16	5/8	7/8-14	3/8
		HJ-GE-14-BT-12	HJ-GE-14-BT-12-SS	14-15-16	5/8	7/8-14	3/4
		HJ-GE-17-BT-08	HJ-GE-17-BT-08-SS	18-20	3/4	1.1/16-12	1/2
	290	HJ-GE-17-BT-16	HJ-GE-17-BT-16-SS	18-20	3/4	1.1/16-12	1
		HJ-GE-21-BT-12	HJ-GE-21-BT-12-SS	25	1	1.5/16-12	3/4
	240	HJ-GE-26-BT-16	HJ-GE-26-BT-16-SS	30-32	1.1/4	1.5/8-12	1
		HJ-GE-30-BT-20	HJ-GE-30-BT-20-SS	38	1.1/2	1.7/8-12	1.1/4

description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]	P [NPT]
				[mm]	[inch]		
Straight nipple, NPT (taper) thread    <b>GE - NT</b>	350	HJ-GE-07-NT-02	HJ-GE-07-NT-02-SS	6	1/4	7/16-20	1/8
		HJ-GE-08-NT-02	HJ-GE-08-NT-02-SS	8	5/16	1/2-20	1/8
		HJ-GE-09-NT-04	HJ-GE-09-NT-04-SS	10	3/8	9/16-18	1/4
		HJ-GE-12-NT-06	HJ-GE-12-NT-06-SS	12	1/2	3/4-16	3/8
		HJ-GE-14-NT-08	HJ-GE-14-NT-08-SS	14-15-16	5/8	7/8-14	1/2
		HJ-GE-17-NT-12	HJ-GE-17-NT-12-SS	18-20	3/4	1.1/16-12	3/4
	290	HJ-GE-21-NT-16	HJ-GE-21-NT-16-SS	25	1	1.5/16-12	1
	240	HJ-GE-26-NT-20	HJ-GE-26-NT-20-SS	30-32	1.1/4	1.5/8-12	1.1/4
		HJ-GE-30-NT-24	HJ-GE-30-NT-24-SS	38	1.1/2	1.7/8-12	1.1/2
	350	HJ-GE-07-NT-04	HJ-GE-07-NT-04-SS	6	1/4	7/16-20	1/4
		HJ-GE-07-NT-06	HJ-GE-07-NT-06-SS	6	1/4	7/16-20	3/8
		HJ-GE-07-NT-08	HJ-GE-07-NT-08-SS	6	1/4	7/16-20	1/2
		HJ-GE-08-NT-04	HJ-GE-08-NT-04-SS	8	5/16	1/2-20	1/4
		HJ-GE-09-NT-02	HJ-GE-09-NT-02-SS	10	3/8	9/16-18	1/8
		HJ-GE-09-NT-06	HJ-GE-09-NT-06-SS	10	3/8	9/16-18	3/8
		HJ-GE-09-NT-08	HJ-GE-09-NT-08-SS	10	3/8	9/16-18	1/2
		HJ-GE-12-NT-04	HJ-GE-12-NT-04-SS	12	1/2	3/4-16	1/4
		HJ-GE-12-NT-08	HJ-GE-12-NT-08-SS	12	1/2	3/4-16	1/2
		HJ-GE-12-NT-12	HJ-GE-12-NT-12-SS	12	1/2	3/4-16	3/4
		HJ-GE-07-NT-21	HJ-GE-07-NT-21-SS	14-15-16	5/8	7/8-14	3/8
		HJ-GE-14-NT-12	HJ-GE-14-NT-12-SS	14-15-16	5/8	7/8-14	3/4
		HJ-GE-17-NT-08	HJ-GE-17-NT-08-SS	18-20	3/4	1.1/16-12	1/2
	290	HJ-GE-17-NT-16	HJ-GE-17-NT-16-SS	18-20	3/4	1.1/16-12	1
		HJ-GE-21-NT-12	HJ-GE-21-NT-12-SS	25	1	1.5/16-12	3/4
	240	HJ-GE-26-NT-16	HJ-GE-26-NT-16-SS	30-32	1.1/4	1.5/8-12	1
		HJ-GE-30-NT-20	HJ-GE-30-NT-20-SS	38	1.1/2	1.7/8-12	1.1/4

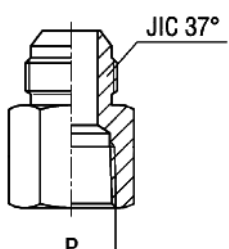
## HIGH PRESSURE - JIC 37° connectors

description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]	M [mm]
				[mm]	[inch]		
Straight nipple, metric thread  	350	HJ-GE-07-ME-10	-	6	1/4	7/16-20	10x1
		HJ-GE-08-ME-12	-	8	5/16	1/2-20	12x1.5
		HJ-GE-09-ME-14	-	10	3/8	9/16-18	14x1.5
		HJ-GE-12-ME-16	-	12	1/2	3/4-16	16x1.5
		HJ-GE-14-ME-22	-	14-15-16	5/8	7/8-14	22x1.5
		HJ-GE-17-ME-27	-	18-20	3/4	1.1/16-12	27x2
	290	HJ-GE-21-ME-33	-	25	1	1.5/16-12	33x2
	240	HJ-GE-26-ME-42	-	30-32	1.1/4	1.5/8-12	42x2
		HJ-GE-30-ME-48	-	38	1.1/2	1.7/8-12	48x2
	350	HJ-GE-07-ME-12	-	6	1/4	7/16-20	12x1.5
		HJ-GE-08-ME-10	-	8	5/16	1/2-20	10x1
		HJ-GE-08-ME-14	-	8	5/16	1/2-20	14x1.5
		HJ-GE-09-ME-16	-	10	3/8	9/16-18	16x1.5
		HJ-GE-12-ME-14	-	12	1/2	3/4-16	14x1.5
		HJ-GE-12-ME-18	-	12	1/2	3/4-16	18x1.5
		HJ-GE-14-ME-18	-	14-15-16	5/8	7/8-14	18x1.5
		HJ-GE-14-ME-20	-	14-15-16	5/8	7/8-14	20x1.5
		HJ-GE-17-ME-22	-	18-20	3/4	1.1/16-12	22x1.5
		HJ-GE-21-ME-27	-	25	1	1.5/16-12	27x2

**GE - ME**

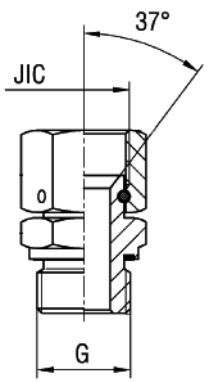
description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]	G [BSP]
				[mm]	[inch]		
Straight fitting, BSP female thread  	350	HJ-GAI-07-B-02	HJ-GAI-07-B-02-SS	6	1/4	7/16-20	1/8
		HJ-GAI-08-B-02	HJ-GAI-08-B-02-SS	8	5/16	1/2-20	1/8
		HJ-GAI-09-B-04	HJ-GAI-09-B-04-SS	10	3/8	9/16-18	1/4
		HJ-GAI-12-B-06	HJ-GAI-12-B-06-SS	12	1/2	3/4-16	3/8
		HJ-GAI-14-B-08	HJ-GAI-14-B-08-SS	14-15-16	5/8	7/8-14	1/2
		HJ-GAI-17-B-12	HJ-GAI-17-B-12-SS	18-20	3/4	1.1/16-12	3/4
	290	HJ-GAI-21-B-16	HJ-GAI-21-B-16-SS	25	1	1.5/16-12	1
	240	HJ-GAI-26-B-20	HJ-GAI-26-B-20-SS	30-32	1.1/4	1.5/8-12	1.1/4
		HJ-GAI-30-B-24	HJ-GAI-30-B-24-SS	38	1.1/2	1.7/8-12	1.1/2
	350	HJ-GAI-07-B-04	HJ-GAI-07-B-04-SS	6	1/4	7/16-20	1/4
		HJ-GAI-08-B-04	HJ-GAI-08-B-04-SS	8	5/16	1/2-20	1/4
		HJ-GAI-09-B-06	HJ-GAI-09-B-06-SS	10	3/8	9/16-18	3/8
		HJ-GAI-09-B-08	-	10	3/8	9/16-18	1/2
		HJ-GAI-12-B-04	-	12	1/2	3/4-16	1/4
		HJ-GAI-12-B-08	HJ-GAI-12-B-08-SS	12	1/2	3/4-16	1/2
		HJ-GAI-17-B-08	-	18-20	3/4	1.1/16-12	1/2
		HJ-GAI-26-B-16	-	30-32	1.1/4	1.5/8-12	1
		HJ-GAI-30-B-20	-	38	1.1/2	1.7/8-12	1.1/4

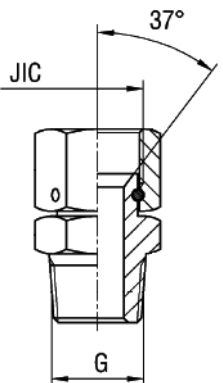
**GAI - B**

description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]	P [NPT]
				[mm]	[inch]		
Straight fitting, NPT female thread  	350	HJ-GAI-07-N-02	-	6	1/4	7/16-20	1/8
		HJ-GAI-08-N-02	-	8	5/16	1/2-20	1/8
		HJ-GAI-09-N-04	-	10	3/8	9/16-18	1/4
		HJ-GAI-12-N-06	-	12	1/2	3/4-16	3/8
		HJ-GAI-14-N-08	-	14-15-16	5/8	7/8-14	1/2
		HJ-GAI-17-N-12	-	18-20	3/4	1.1/16-12	3/4
	290	HJ-GAI-21-N-16	-	25	1	1.5/16-12	1
	240	HJ-GAI-26-N-20	-	30-32	1.1/4	1.5/8-12	1.1/4
		HJ-GAI-30-N-24	-	38	1.1/2	1.7/8-12	1.1/2
	350	HJ-GAI-07-N-04	-	6	1/4	7/16-20	1/4
		HJ-GAI-08-N-04	-	8	5/16	1/2-20	1/4
		HJ-GAI-09-N-06	-	10	3/8	9/16-18	3/8
		HJ-GAI-12-N-04	-	12	1/2	3/4-16	1/4
		HJ-GAI-12-N-08	-	12	1/2	3/4-16	1/2
		HJ-GAI-17-N-08	-	18-20	3/4	1.1/16-12	1/2

**GAI - N**

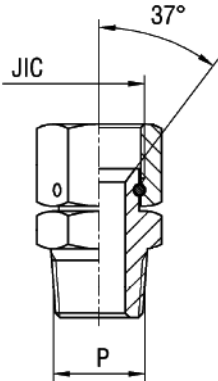
## HIGH PRESSURE - JIC 37° connectors

description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]	G [BSP]
				[mm]	[inch]		
Straight fitting, BSP male thread    <b>EVGE - BE</b>	350	HJ-EVGE-07-BE-02	HJ-EVGE-07-BE-02-SS	6	1/4	7/16-20	1/8
		HJ-EVGE-08-BE-02	HJ-EVGE-08-BE-02-SS	8	5/16	1/2-20	1/8
		HJ-EVGE-09-BE-04	HJ-EVGE-09-BE-04-SS	10	3/8	9/16-18	1/4
		HJ-EVGE-12-BE-06	HJ-EVGE-12-BE-06-SS	12	1/2	3/4-16	3/8
		HJ-EVGE-14-BE-08	HJ-EVGE-14-BE-08-SS	14-15-16	5/8	7/8-14	1/2
		HJ-EVGE-17-BE-12	HJ-EVGE-17-BE-12-SS	18-20	3/4	1.1/16-12	3/4
	290	HJ-EVGE-21-BE-16	HJ-EVGE-21-BE-16-SS	25	1	1.5/16-12	1
	240	HJ-EVGE-26-BE-20	HJ-EVGE-26-BE-20-SS	30-32	1.1/4	1.5/8-12	1.1/4
		HJ-EVGE-30-BE-24	HJ-EVGE-30-BE-24-SS	38	1.1/2	1.7/8-12	1.1/2
	350	HJ-EVGE-07-BE-04	HJ-EVGE-07-BE-04-SS	6	1/4	7/16-20	1/4
		HJ-EVGE-07-BE-06	-	6	1/4	7/16-20	3/8
		HJ-EVGE-08-BE-04	HJ-EVGE-08-BE-04-SS	8	5/16	1/2-20	1/4
		HJ-EVGE-08-BE-06	HJ-EVGE-08-BE-06-SS	8	5/16	1/2-20	3/8
		HJ-EVGE-09-BE-06	HJ-EVGE-09-BE-06-SS	10	3/8	9/16-18	3/8
		HJ-EVGE-09-BE-08	HJ-EVGE-09-BE-08-SS	10	3/8	9/16-18	1/2
		HJ-EVGE-12-BE-04	HJ-EVGE-12-BE-04-SS	12	1/2	3/4-16	1/4
		HJ-EVGE-12-BE-08	HJ-EVGE-12-BE-08-SS	12	1/2	3/4-16	1/2
		HJ-EVGE-14-BE-06	HJ-EVGE-14-BE-06-SS	14-15-16	5/8	7/8-14	3/8
		HJ-EVGE-14-BE-12	HJ-EVGE-14-BE-12-SS	14-15-16	5/8	7/8-14	3/4
		HJ-EVGE-17-BE-08	HJ-EVGE-17-BE-08-SS	18-20	3/4	1.1/16-12	1/2
	290	HJ-EVGE-17-BE-16	HJ-EVGE-17-BE-16-SS	18-20	3/4	1.1/16-12	1
		HJ-EVGE-21-BE-12	HJ-EVGE-21-BE-12-SS	25	1	1.5/16-12	3/4
	240	HJ-EVGE-21-BE-20	-	25	1	1.5/16-12	1.1/4
		HJ-EVGE-26-BE-16	HJ-EVGE-26-BE-16-SS	30-32	1.1/4	1.5/8-12	1
		HJ-EVGE-30-BE-20	HJ-EVGE-30-BE-20-SS	38	1.1/2	1.7/8-12	1.1/4

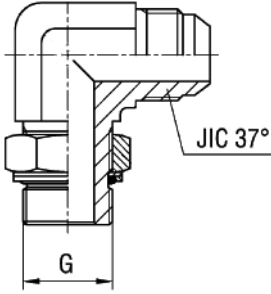
description	press. [bar]	code (carbon steel)	code (AISI 316)	JIC 37 [UN-UNF]	G [BSPT]
Straight fitting, BSPT male thread    <b>EVGE - BT</b>	350	HJ-EVGE-07-BT-02	-	7/16-20	1/8
		HJ-EVGE-08-BT-02	-	1/2-20	1/8
		HJ-EVGE-09-BT-04	-	9/16-18	1/4
		HJ-EVGE-12-BT-06	-	3/4-16	3/8
		HJ-EVGE-14-BT-08	-	7/8-14	1/2
		HJ-EVGE-17-BT-12	-	1.1/16-12	3/4
	290	HJ-EVGE-21-BT-16	-	1.5/16-12	1
	240	HJ-EVGE-26-BT-20	-	1.5/8-12	1.1/4
		HJ-EVGE-30-BT-24	-	1.7/8-12	1.1/2
	350	HJ-EVGE-07-BT-04	-	7/16-20	1/4
		HJ-EVGE-08-BT-04	-	1/2-20	1/4
		HJ-EVGE-09-BT-06	-	9/16-18	3/8
		HJ-EVGE-12-BT-04	-	3/4-16	1/4
		HJ-EVGE-12-BT-08	-	3/4-16	1/2
		HJ-EVGE-14-BT-06	-	7/8-14	3/8
		HJ-EVGE-14-BT-12	-	7/8-14	3/4
		HJ-EVGE-17-BT-08	-	1.1/16-12	1/2
	290	HJ-EVGE-17-BT-16	-	1.1/16-12	1
		HJ-EVGE-21-BT-12	-	1.5/16-12	3/4



## HIGH PRESSURE - JIC 37° connectors

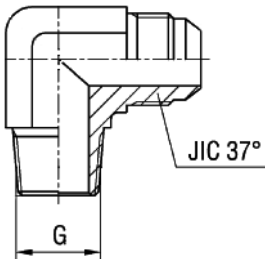
description	press. [bar]	code (carbon steel)	code (AISI 316)	JIC 37° [UN-UNF]	P [NPT]
Straight fitting, NPT thread  	350	HJ-EVGE-07-NT-02	HJ-EVGE-07-NT-02-SS	7/16-20	1/8
		HJ-EVGE-08-NT-02	HJ-EVGE-08-NT-02-SS	1/2-20	1/8
		HJ-EVGE-09-NT-04	HJ-EVGE-09-NT-04-SS	9/16-18	1/4
		HJ-EVGE-12-NT-06	HJ-EVGE-12-NT-06-SS	3/4-16	3/8
		HJ-EVGE-14-NT-08	HJ-EVGE-14-NT-08-SS	7/8-14	1/2
	290	HJ-EVGE-17-NT-12	HJ-EVGE-17-NT-12-SS	1.1/16-12	3/4
	240	HJ-EVGE-21-NT-16	HJ-EVGE-21-NT-16-SS	1.5/16-12	1
		HJ-EVGE-26-NT-20	HJ-EVGE-26-NT-20-SS	1.5/8-12	1.1/4
	350	HJ-EVGE-30-NT-24	HJ-EVGE-30-NT-24-SS	1.7/8-12	1.1/2
		HJ-EVGE-07-NT-04	HJ-EVGE-07-NT-04-SS	7/16-20	1/4
		HJ-EVGE-08-NT-04	HJ-EVGE-08-NT-04-SS	1/2-20	1/4
		HJ-EVGE-09-NT-02	HJ-EVGE-09-NT-02-SS	9/16-18	1/8
		HJ-EVGE-09-NT-06	HJ-EVGE-09-NT-06-SS	9/16-18	3/8
		HJ-EVGE-09-NT-08	HJ-EVGE-09-NT-08-SS	9/16-18	1/2
		HJ-EVGE-12-NT-04	HJ-EVGE-12-NT-04-SS	3/4-16	1/4
		HJ-EVGE-12-NT-08	HJ-EVGE-12-NT-08-SS	3/4-16	1/2
		HJ-EVGE-12-NT-12	HJ-EVGE-12-NT-12-SS	3/4-16	3/4
		HJ-EVGE-14-NT-06	HJ-EVGE-14-NT-06-SS	7/8-14	3/8
		HJ-EVGE-14-NT-12	HJ-EVGE-14-NT-12-SS	7/8-14	3/4
		HJ-EVGE-17-NT-08	HJ-EVGE-17-NT-08-SS	1.1/16-12	1/2
	290	HJ-EVGE-21-NT-12	HJ-EVGE-21-NT-12-SS	1.5/16-12	3/4
	240	HJ-EVGE-26-NT-16	HJ-EVGE-26-NT-16-SS	1.5/8-12	1

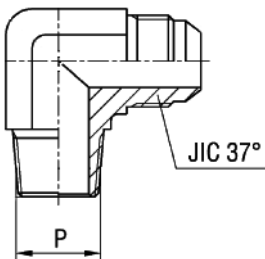
**EVGE - NT**

description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]	G [BSP]
				[mm]	[inch]		
Adjustable 90° elbow nipple, BSP thread, ISO 6199-G seal  	350	HJ-WE-07-BG-02	HJ-WE-07-BG-02-SS	6	1/4	7/16-20	1/8
	315	HJ-WE-08-BG-04	HJ-WE-08-BG-04-SS	8	5/16	1/2-20	1/4
		HJ-WE-09-BG-04	HJ-WE-09-BG-04-SS	10	3/8	9/16-18	1/4
	250	HJ-WE-12-BG-06	HJ-WE-12-BG-06-SS	12	1/2	3/4-16	3/8
		HJ-WE-14-BG-08	HJ-WE-14-BG-08-SS	14-15-16	5/8	7/8-14	1/2
		HJ-WE-17-BG-12	HJ-WE-17-BG-12-SS	18-20	3/4	1.1/16-12	3/4
	200	HJ-WE-21-BG-16	HJ-WE-21-BG-16-SS	25	1	1.5/16-12	1
		HJ-WE-26-BG-20	HJ-WE-26-BG-20-SS	30-32	1.1/4	1.5/8-12	1.1/4
	160	HJ-WE-30-BG-24	HJ-WE-30-BG-24-SS	38	1.1/2	1.7/8-12	1.1/2
	315	HJ-WE-07-BG-04	HJ-WE-07-BG-04-SS	6	1/4	7/16-20	1/4
	250	HJ-WE-07-BG-06	-	6	1/4	7/16-20	3/8
		HJ-WE-07-BG-08	-	6	1/4	7/16-20	1/2
	350	HJ-WE-08-BG-02	-	8	5/16	1/2-20	1/8
	250	HJ-WE-08-BG-06	-	8	5/16	1/2-20	3/8
		HJ-WE-09-BG-06	HJ-WE-09-BG-06-SS	10	3/8	9/16-18	3/8
		HJ-WE-09-BG-08	HJ-WE-09-BG-08-SS	10	3/8	9/16-18	1/2
	315	HJ-WE-12-BG-04	-	12	1/2	3/4-16	1/4
	250	HJ-WE-12-BG-08	HJ-WE-12-BG-08-SS	12	1/2	3/4-16	1/2
		HJ-WE-12-BG-12	-	12	1/2	3/4-16	3/4
		HJ-WE-14-BG-06	-	14-15-16	5/8	7/8-14	3/8
		HJ-WE-14-BG-12	-	14-15-16	5/8	7/8-14	3/4
		HJ-WE-17-BG-08	HJ-WE-17-BG-08-SS	18-20	3/4	1.1/16-12	1/2
	200	HJ-WE-17-BG-16	-	18-20	3/4	1.1/16-12	1
	250	HJ-WE-21-BG-12	-	25	1	1.5/16-12	3/4
	200	HJ-WE-21-BG-20	-	25	1	1.5/16-12	1.1/4
		HJ-WE-26-BG-16	-	30-32	1.1/4	1.5/8-12	1
		HJ-WE-30-BG-20	-	38	1.1/2	1.7/8-12	1.1/4

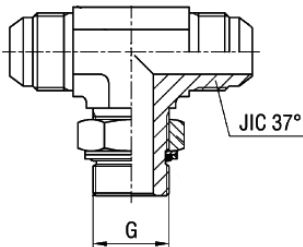
**WE - BG**

## HIGH PRESSURE - JIC 37° connectors

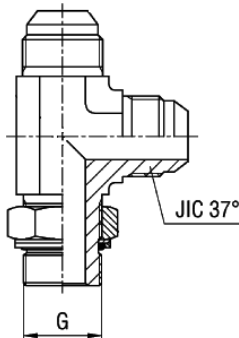
description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]	G [BSPT]
				[mm]	[inch]		
90° elbow nipple, BSPT (taper) thread    <b>WE - BT</b>	350	HJ-WE-07-BT-02	HJ-WE-07-BT-02-SS	6	1/4	7/16-20	1/8
		HJ-WE-08-BT-02	HJ-WE-08-BT-02-SS	8	5/16	1/2-20	1/8
		HJ-WE-09-BT-04	HJ-WE-09-BT-04-SS	10	3/8	9/16-18	1/4
		HJ-WE-12-BT-06	HJ-WE-12-BT-06-SS	12	1/2	3/4-16	3/8
		HJ-WE-14-BT-08	HJ-WE-14-BT-08-SS	14-15-16	5/8	7/8-14	1/2
		HJ-WE-17-BT-12	HJ-WE-17-BT-12-SS	18-20	3/4	1.1/16-12	3/4
	290	HJ-WE-21-BT-16	HJ-WE-21-BT-16-SS	25	1	1.5/16-12	1
	240	HJ-WE-26-BT-20	HJ-WE-26-BT-20-SS	30-32	1.1/4	1.5/8-12	1.1/4
		HJ-WE-30-BT-24	HJ-WE-30-BT-24-SS	38	1.1/2	1.7/8-12	1.1/2
	350	HJ-WE-07-BT-04	HJ-WE-07-BT-04-SS	6	1/4	7/16-20	1/4
		HJ-WE-08-BT-04	HJ-WE-08-BT-04-SS	8	5/16	1/2-20	1/4
		HJ-WE-09-BT-02	HJ-WE-09-BT-02-SS	10	3/8	9/16-18	1/8
		HJ-WE-09-BT-06	HJ-WE-09-BT-06-SS	10	3/8	9/16-18	3/8
		HJ-WE-09-BT-08	HJ-WE-09-BT-08-SS	10	3/8	9/16-18	1/2
		HJ-WE-12-BT-04	HJ-WE-12-BT-04-SS	12	1/2	3/4-16	1/4
		HJ-WE-12-BT-08	HJ-WE-12-BT-08-SS	12	1/2	3/4-16	1/2
		HJ-WE-12-BT-12	-	12	1/2	3/4-16	3/4
		HJ-WE-14-BT-06	HJ-WE-14-BT-06-SS	14-15-16	5/8	7/8-14	3/8
		HJ-WE-14-BT-12	HJ-WE-14-BT-12-SS	14-15-16	5/8	7/8-14	3/4
		HJ-WE-17-BT-08	HJ-WE-17-BT-08-SS	18-20	3/4	1.1/16-12	1/2
	290	HJ-WE-17-BT-16	HJ-WE-17-BT-16-SS	18-20	3/4	1.1/16-12	1
		HJ-WE-21-BT-12	HJ-WE-21-BT-12-SS	25	1	1.5/16-12	3/4
	240	HJ-WE-26-BT-16	HJ-WE-26-BT-16-SS	30-32	1.1/4	1.5/8-12	1

description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]	P [NPT]
				[mm]	[inch]		
90° elbow nipple, NPT (taper) thread    <b>WE - NT</b>	350	HJ-WE-07-NT-02	HJ-WE-07-NT-02-SS	6	1/4	7/16-20	1/8
		HJ-WE-08-NT-02	HJ-WE-08-NT-02-SS	8	5/16	1/2-20	1/8
		HJ-WE-09-NT-04	HJ-WE-09-NT-04-SS	10	3/8	9/16-18	1/4
		HJ-WE-12-NT-06	HJ-WE-12-NT-06-SS	12	1/2	3/4-16	3/8
		HJ-WE-14-NT-08	HJ-WE-14-NT-08-SS	14-15-16	5/8	7/8-14	1/2
		HJ-WE-17-NT-12	HJ-WE-17-NT-12-SS	18-20	3/4	1.1/16-12	3/4
	290	HJ-WE-21-NT-16	HJ-WE-21-NT-16-SS	25	1	1.5/16-12	1
	240	HJ-WE-26-NT-20	HJ-WE-26-NT-20-SS	30-32	1.1/4	1.5/8-12	1.1/4
		HJ-WE-30-NT-24	HJ-WE-30-NT-24-SS	38	1.1/2	1.7/8-12	1.1/2
	350	HJ-WE-07-NT-04	HJ-WE-07-NT-04-SS	6	1/4	7/16-20	1/4
		HJ-WE-07-NT-06	HJ-WE-07-NT-06-SS	6	1/4	7/16-20	3/8
		HJ-WE-07-NT-08	-	6	1/4	7/16-20	1/2
		HJ-WE-08-NT-04	HJ-WE-08-NT-04-SS	8	5/16	1/2-20	1/4
		HJ-WE-09-NT-02	HJ-WE-09-NT-02-SS	10	3/8	9/16-18	1/8
		HJ-WE-09-NT-06	HJ-WE-09-NT-06-SS	10	3/8	9/16-18	3/8
		HJ-WE-09-NT-08	HJ-WE-09-NT-08-SS	10	3/8	9/16-18	1/2
		HJ-WE-12-NT-04	HJ-WE-12-NT-04-SS	12	1/2	3/4-16	1/4
		HJ-WE-12-NT-08	HJ-WE-12-NT-08-SS	12	1/2	3/4-16	1/2
		HJ-WE-12-NT-12	-	12	1/2	3/4-16	3/4
		HJ-WE-14-NT-06	HJ-WE-14-NT-06-SS	14-15-16	5/8	7/8-14	3/8
		HJ-WE-14-NT-12	HJ-WE-14-NT-12-SS	14-15-16	5/8	7/8-14	3/4
		HJ-WE-17-NT-08	HJ-WE-17-NT-08-SS	18-20	3/4	1.1/16-12	1/2
	290	HJ-WE-17-NT-16	HJ-WE-17-NT-16-SS	18-20	3/4	1.1/16-12	1
		HJ-WE-21-NT-12	HJ-WE-21-NT-12-SS	25	1	1.5/16-12	3/4
	240	HJ-WE-21-NT-20	-	25	1	1.5/16-12	1.1/4
		HJ-WE-26-NT-16	HJ-WE-26-NT-16-SS	30-32	1.1/4	1.5/8-12	1
		HJ-WE-26-NT-24	-	30-32	1.1/4	1.5/8-12	1.1/2
		HJ-WE-30-NT-20	HJ-WE-30-NT-20-SS	38	1.1/2	1.7/8-12	1.1/4

## HIGH PRESSURE - JIC 37° connectors

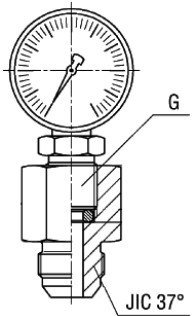
description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]	G [BSP]
				[mm]	[inch]		
Adjustable tee nipple, BSP thread, ISO 6149-G seal  	350	HJ-TE-07-BG-02	-	6	1/4	7/16-20	1/8
	315	HJ-TE-08-BG-04	-	8	5/16	1/2-20	1/4
		HJ-TE-09-BG-04	-	10	3/8	9/16-18	1/4
	250	HJ-TE-12-BG-06	-	12	1/2	3/4-16	3/8
		HJ-TE-14-BG-08	-	14-15-16	5/8	7/8-14	1/2
		HJ-TE-17-BG-12	-	18-20	3/4	1.1/16-12	3/4
	200	HJ-TE-21-BG-16	-	25	1	1.5/16-12	1
		HJ-TE-26-BG-20	-	30-32	1.1/4	1.5/8-12	1.1/4
	160	HJ-TE-30-BG-24	-	38	1.1/2	17/8-12	1.1/2
	315	HJ-TE-07-BG-04	-	6	1/4	7/16-20	1/4
	250	HJ-TE-07-BG-06	-	6	1/4	7/16-20	3/8
		HJ-TE-07-BG-08	-	6	1/4	7/16-20	1/2
	350	HJ-TE-08-BG-02	-	8	5/16	1/2-20	1/8
	250	HJ-TE-08-BG-06	-	8	5/16	1/2-20	3/8
		HJ-TE-09-BG-06	-	10	3/8	9/16-18	3/8
		HJ-TE-09-BG-08	-	10	3/8	9/16-18	1/2
	315	HJ-TE-12-BG-04	-	12	1/2	3/4-16	1/4
	250	HJ-TE-12-BG-08	-	12	1/2	3/4-16	1/2
		HJ-TE-12-BG-12	-	12	1/2	3/4-16	3/4
		HJ-TE-14-BG-06	-	14-15-16	5/8	7/8-14	3/8
		HJ-TE-14-BG-12	-	14-15-16	5/8	7/8-14	3/4
		HJ-TE-17-BG-08	-	18-20	3/4	1.1/16-12	1/2
	200	HJ-TE-17-BG-16	-	18-20	3/4	1.1/16-12	1
	250	HJ-TE-21-BG-12	-	25	1	1.5/16-12	3/4
	200	HJ-TE-21-BG-20	-	25	1	1.5/16-12	1.1/4
		HJ-TE-26-BG-16	-	30-32	1.1/4	1.5/8-12	1
		HJ-TE-30-BG-20	-	38	1.1/2	1.7/8-12	1.1/4

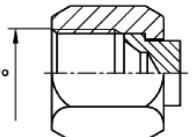
**TE - BG**

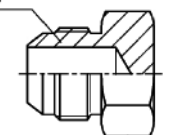
description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]	G [BSP]
				[mm]	[inch]		
Adjustable tee nipple, BSP thread, ISO 6149-G seal  	350	HJ-LE-07-BG-02	-	6	1/4	7/16-20	1/8
	315	HJ-LE-08-BG-04	-	8	5/16	1/2-20	1/4
		HJ-LE-09-BG-04	-	10	3/8	9/16-18	1/4
	250	HJ-LE-12-BG-06	-	12	1/2	3/4-16	3/8
		HJ-LE-14-BG-08	-	14-15-16	5/8	7/8-14	1/2
		HJ-LE-17-BG-12	-	18-20	3/4	1.1/16-12	3/4
	200	HJ-LE-21-BG-16	-	25	1	1.5/16-12	1
		HJ-LE-26-BG-20	-	30-32	1.1/4	1.5/8-12	1.1/4
	160	HJ-LE-30-BG-24	-	38	1.1/2	1.7/8-12	1.1/2
	315	HJ-LE-07-BG-04	-	6	1/4	7/16-20	1/4
	250	HJ-LE-07-BG-06	-	6	1/4	7/16-20	3/8
		HJ-LE-07-BG-08	-	6	1/4	7/16-20	1/2
	350	HJ-LE-08-BG-02	-	8	5/16	1/2-20	1/8
	250	HJ-LE-08-BG-06	-	8	5/16	1/2-20	3/8
		HJ-LE-09-BG-06	-	10	3/8	9/16-18	3/8
		HJ-LE-09-BG-08	-	10	3/8	9/16-18	1/2
	315	HJ-LE-12-BG-04	-	12	1/2	3/4-16	1/4
	250	HJ-LE-12-BG-08	-	12	1/2	3/4-16	1/2
		HJ-LE-12-BG-12	-	12	1/2	3/4-16	3/4
		HJ-LE-14-BG-06	-	14-15-16	5/8	7/8-14	3/8
		HJ-LE-14-BG-12	-	14-15-16	5/8	7/8-14	3/4
		HJ-LE-17-BG-08	-	18-20	3/4	1.1/16-12	1/2
	200	HJ-LE-17-BG-16	-	18-20	3/4	1.1/16-12	1
	250	HJ-LE-21-BG-12	-	25	1	1.5/16-12	3/4
	200	HJ-LE-21-BG-20	-	25	1	1.5/16-12	1.1/4
		HJ-LE-26-BG-16	-	30-32	1.1/4	1.5/8-12	1
		HJ-LE-30-BG-20	-	38	1.1/2	1.7/8-12	1.1/4

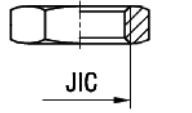
**LE - BG**

## HIGH PRESSURE - JIC 37° connectors

description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]	G [BSP]
				[mm]	[inch]		
Gauge fitting  <b>MAV</b>	350	HJ-MAV-07-04	HJ-MAV-07-04-SS	6	1/4	7/16-20	1/4
		HJ-MAV-08-04	HJ-MAV-08-04-SS	8	5/16	1/2-20	1/4
		HJ-MAV-09-04	HJ-MAV-09-04-SS	10	3/8	9/16-18	1/4
		HJ-MAV-12-04	HJ-MAV-12-04-SS	12	1/2	3/4-16	1/4
		HJ-MAV-07-08	HJ-MAV-07-08-SS	6	1/4	7/16-20	1/2
		HJ-MAV-08-08	HJ-MAV-08-08-SS	8	5/16	1/2-20	1/2
		HJ-MAV-09-08	HJ-MAV-09-08-SS	10	3/8	9/16-18	1/2
		HJ-MAV-12-08	HJ-MAV-12-08-SS	12	1/2	3/4-16	1/2

description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]
				[mm]	[inch]	
Plug, female thread  <b>VKA</b>	450	HJ-VKA-07	HJ-VKA-07-SS	6	1/4	7/16-20
		HJ-VKA-08	HJ-VKA-08-SS	8	5/16	1/2-20
	350	HJ-VKA-09	HJ-VKA-09-SS	10	3/8	9/16-18
		HJ-VKA-12	HJ-VKA-12-SS	12	1/2	3/4-16
		HJ-VKA-14	HJ-VKA-14-SS	14-15-16	5/8	7/8-14
		HJ-VKA-17	HJ-VKA-17-SS	18-20	3/4	1.1/16-12
	290	HJ-VKA-21	HJ-VKA-21-SS	25	1	1.5/16-12
	240	HJ-VKA-26	HJ-VKA-26-SS	30-32	1.1/4	1.5/8-12
		HJ-VKA-30	HJ-VKA-30-SS	38	1.1/2	1.7/8-12

description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]
				[mm]	[inch]	
Plug, male thread  <b>ROV</b>	450	HJ-ROV-07	HJ-ROV-07-SS	6	1/4	7/16-20
		HJ-ROV-08	HJ-ROV-08-SS	8	5/16	1/2-20
	350	HJ-ROV-09	HJ-ROV-09-SS	10	3/8	9/16-18
		HJ-ROV-12	HJ-ROV-12-SS	12	1/2	3/4-16
		HJ-ROV-14	HJ-ROV-14-SS	14-15-16	5/8	7/8-14
		HJ-ROV-17	HJ-ROV-17-SS	18-20	3/4	1.1/16-12
	290	HJ-ROV-21	HJ-ROV-21-SS	25	1	1.5/16-12
	240	HJ-ROV-26	HJ-ROV-26-SS	30-32	1.1/4	1.5/8-12
		HJ-ROV-30	HJ-ROV-30-SS	38	1.1/2	1.7/8-12

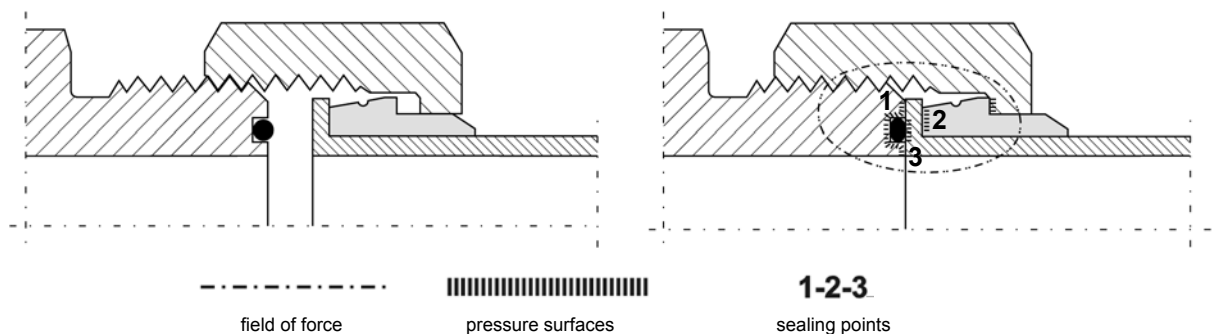
description	press. [bar]	code (carbon steel)	code (AISI 316)	pipe O.D.		JIC 37° [UN-UNF]
				[mm]	[inch]	
Flat nut for bulkhead connectors  <b>MP</b>	450	HJ-MP-07	-	6	1/4	7/16-20
		HJ-MP-08	-	8	5/16	1/2-20
	350	HJ-MP-09	-	10	3/8	9/16-18
		HJ-MP-12	-	12	1/2	3/4-16
		HJ-MP-14	-	14-15-16	5/8	7/8-14
		HJ-MP-17	-	18-20	3/4	1.1/16-12
	290	HJ-MP-21	-	25	1	1.5/16-12
	240	HJ-MP-26	-	30-32	1.1/4	1.5/8-12
		HJ-MP-30	-	38	1.1/2	1.7/8-12

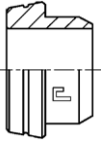
# HIGH PRESSURE - ORFS connectors


## SAE fittings - J1453 (ORFS)

ORFS (O-Ring Face Seal) connectors are used to connect rigid pipes in hydraulic applications. Pipe ends are flared at 90° angle. The sealing is achieved by pressing an O-ring placed in the groove of the surface front flat-face of the fitting with a male thread. The ORFS fittings can also be connected with fittings of flexible hydraulic hose assemblies (e.g. TI-ZOW110, ZOZ110).

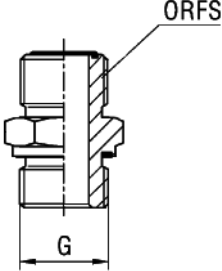
Material: zinc-plated carbon steel or AISI 316 steel. Add SS to the code of AISI 316 connector.



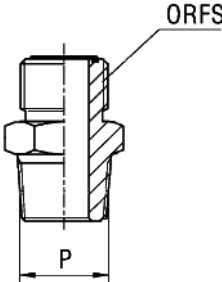
description	pressure [bar]	code (carbon steel)	pipe O.D.	
			[mm]	[inch]
  <b>FM</b> <b>FC</b>	630	HO-FC-04	-	1/4
		HO-FC-05	-	5/16
		HO-FC-06	-	3/8
		HO-FC-08	-	1/2
	420	HO-FC-10	-	5/8
		HO-FC-12	-	3/4
		HO-FC-14	-	7/8
		HO-FC-16	-	1
	280	HO-FC-20	-	1.1/4
		HO-FC-24	-	1.1/2
	630	HO-FM-06	6	-
		HO-FM-08	8	-
		HO-FM-10	10	-
		HO-FM-12	12	-
	420	HO-FM-14	14	-
		HO-FM-15	15	-
		HO-FM-16	16	-
		HO-FM-18	18	-
		HO-FM-20	20	-
		HO-FM-22	22	-
		HO-FM-25	25	-
		HO-FM-28	28	-
	280	HO-FM-30	30	-
		HO-FM-32	32	-
		HO-FM-35	35	-
		HO-FM-38	38	-

description	pressure [bar]	code (carbon steel)	pipe O.D.		ORFS
			[mm]	[inch]	
 <b>M</b>	630	HO-M-09	6	1/4	9/16-18
		HO-M-11	8-10	5/16-3/8	11/16-16
		HO-M-13	12	1/2	13/16-16
	420	HO-M-16	14-15-16	5/8	1-14
		HO-M-19	18-20	3/4	1.3/16-12
		HO-M-23	22-25	7/8-1	1.7/16-12
	280	HO-M-27	28-30-32	1.1/4	1.11/16-12
		HO-M-32	35-38	1.1/2	2-12

# HIGH PRESSURE - ORFS connectors

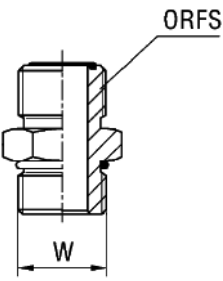
description	pressure [bar]	code (carbon steel)	approx. pipe O.D.		ORFS	G [BSP]
			[mm]	[inch]		
Straight nipple, BSP thread (elastomeric seal) <div>  </div>	630	HO-GE-09-BE-02	6	1/4	9/16-18	1/8
		HO-GE-09-BE-04	6	1/4	9/16-18	1/4
		HO-GE-09-BE-06	6	1/4	9/16-18	3/8
		HO-GE-09-BE-08	6	1/4	9/16-18	1/2
		HO-GE-11-BE-02	8-10	5/16-3/8	11/16-16	1/8
		HO-GE-11-BE-04	8-10	5/16-3/8	11/16-16	1/4
		HO-GE-11-BE-06	8-10	5/16-3/8	11/16-16	3/8
		HO-GE-11-BE-08	8-10	5/16-3/8	11/16-16	1/2
	420	HO-GE-11-BE-12	8-10	5/16-3/8	11/16-16	3/4
	630	HO-GE-13-BE-04	12	1/2	13/16-16	1/4
		HO-GE-13-BE-06	12	1/2	13/16-16	3/8
		HO-GE-13-BE-08	12	1/2	13/16-16	1/2
	420	HO-GE-13-BE-12	12	1/2	13/16-16	3/4
		HO-GE-16-BE-04	14-15-16	5/8	1-14	1/4
		HO-GE-16-BE-06	14-15-16	5/8	1-14	3/8
		HO-GE-16-BE-08	14-15-16	5/8	1-14	1/2
		HO-GE-16-BE-12	14-15-16	5/8	1-14	3/4
		HO-GE-16-BE-16	14-15-16	5/8	1-14	1
		HO-GE-19-BE-04	18-20	3/4	1.3/16-12	1/4
		HO-GE-19-BE-08	18-20	3/4	1.3/16-12	1/2
		HO-GE-19-BE-12	18-20	3/4	1.3/16-12	3/4
		HO-GE-19-BE-16	18-20	3/4	1.3/16-12	1
		HO-GE-19-BE-20	18-20	3/4	1.3/16-12	1.1/4
		HO-GE-23-BE-04	22-25	7/8-1	1.7/16-12	1/4
		HO-GE-23-BE-12	22-25	7/8-1	1.7/16-12	3/4
		HO-GE-23-BE-16	22-25	7/8-1	1.7/16-12	1
		HO-GE-23-BE-20	22-25	7/8-1	1.7/16-12	1.1/4
	280	HO-GE-23-BE-24	22-25	7/8-1	1.7/16-12	1.1/2
		HO-GE-27-BE-16	28-30-32	1.1/4	1.11/16-12	1
		HO-GE-27-BE-20	28-30-32	1.1/4	1.11/16-12	1.1/4
		HO-GE-27-BE-24	28-30-32	1.1/4	1.11/16-12	1.1/2
		HO-GE-32-BE-24	35-38	1.1/2	2-12	1.1/2

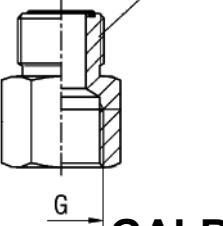
**GE - BE**

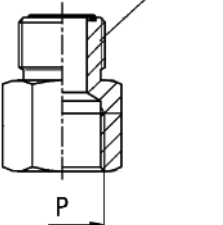
description	pressure [bar]	code (carbon steel)	approx. pipe O.D.		ORFS	P [NPTF]
			[mm]	[inch]		
Straight nipple, NPTF thread <div>  </div>	420	HO-GE-09-NT-02	6	1/4	9/16-18	1/8
	630	HO-GE-09-NT-04	6	1/4	9/16-18	1/4
		HO-GE-09-NT-06	6	1/4	9/16-18	3/8
		HO-GE-11-NT-04	8-10	5/16-3/8	11/16-16	1/4
		HO-GE-11-NT-06	8-10	5/16-3/8	11/16-16	3/8
		HO-GE-11-NT-08	8-10	5/16-3/8	11/16-16	1/2
		HO-GE-13-NT-04	12	1/2	13/16-16	1/4
		HO-GE-13-NT-06	12	1/2	13/16-16	3/8
		HO-GE-13-NT-08	12	1/2	13/16-16	1/2
	420	HO-GE-13-NT-12	12	1/2	13/16-16	3/4
		HO-GE-16-NT-06	14-15-16	5/8	1-14	3/8
		HO-GE-16-NT-08	14-15-16	5/8	1-14	1/2
		HO-GE-16-NT-12	14-15-16	5/8	1-14	3/4
		HO-GE-19-NT-08	18-20	3/4	1.3/16-12	1/2
		HO-GE-19-NT-12	18-20	3/4	1.3/16-12	3/4
		HO-GE-19-NT-16	18-20	3/4	1.3/16-12	1
		HO-GE-23-NT-12	22-25	7/8-1	1.7/16-12	3/4
		HO-GE-23-NT-16	22-25	7/8-1	1.7/16-12	1
	280	HO-GE-27-NT-16	28-30-32	1.1/4	1.11/16-12	1
		HO-GE-27-NT-20	28-30-32	1.1/4	1.11/16-12	1.1/4
		HO-GE-32-NT-20	35-38	1.1/2	2-12	1.1/4
		HO-GE-32-NT-24	35-38	1.1/2	2-12	1.1/2

**GE - NT**

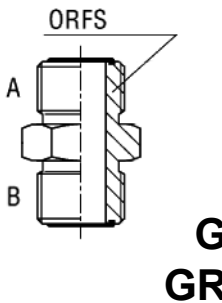
## HIGH PRESSURE - ORFS connectors

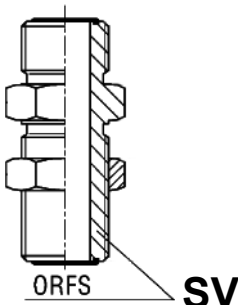
description	pressure [bar]	code (carbon steel)	approx. pipe O.D.		ORFS	W [UNF]
			[mm]	[inch]		
Straight nipple, UNF thread (O-ring + washer seal)    <b>GE - UN</b>	630	HO-GE-09-UN-07	6	1/4	9/16-18	7/16-20
		HO-GE-09-UN-08	6	1/4	9/16-18	1/2-20
		HO-GE-09-UN-09	6	1/4	9/16-18	9/16-18
		HO-GE-09-UN-12	6	1/4	9/16-18	3/4-16
		HO-GE-11-UN-07	8-10	5/16-3/8	11/16-16	7/16-20
		HO-GE-11-UN-08	8-10	5/16-3/8	11/16-16	1/2-20
		HO-GE-11-UN-09	8-10	5/16-3/8	11/16-16	9/16-18
		HO-GE-11-UN-12	8-10	5/16-3/8	11/16-16	3/4-16
	420	HO-GE-11-UN-14	8-10	5/16-3/8	11/16-16	7/8-14
		HO-GE-11-UN-17	8-10	5/16-3/8	11/16-16	1.1/16-12
	630	HO-GE-13-UN-09	12	1/2	13/16-16	9/16-18
		HO-GE-13-UN-12	12	1/2	13/16-16	3/4-16
		HO-GE-13-UN-14	12	1/2	13/16-16	7/8-14
		HO-GE-13-UN-17	12	1/2	13/16-16	1.1/16-12
	420	HO-GE-13-UN-21	12	1/2	13/16-16	1.5/16-12
		HO-GE-16-UN-12	14-15-16	5/8	1-14	3/4-16
		HO-GE-16-UN-14	14-15-16	5/8	1-14	7/8-14
		HO-GE-16-UN-17	14-15-16	5/8	1-14	1.1/16-12
		HO-GE-19-UN-12	18-20	3/4	1.3/16-12	3/4-16
		HO-GE-19-UN-14	18-20	3/4	1.3/16-12	7/8-14
		HO-GE-19-UN-17	18-20	3/4	1.3/16-12	1.1/16-12
		HO-GE-19-UN-21	18-20	3/4	1.3/16-12	1.5/16-12
		HO-GE-23-UN-17	22-25	7/8-1	1.7/16-12	1.1/16-12
		HO-GE-23-UN-21	22-25	7/8-1	1.7/16-12	1.5/16-12
	280	HO-GE-23-UN-26	22-25	7/8-1	1.7/16-12	1.5/8-12
		HO-GE-27-UN-21	28-30-32	1.1/4	1.11/16-12	1.5/16-12
		HO-GE-27-UN-26	28-30-32	1.1/4	1.11/16-12	1.5/8-12
		HO-GE-27-UN-30	28-30-32	1.1/4	1.11/16-12	1.7/8-12
		HO-GE-32-UN-26	35-38	1.1/2	2-12	1.5/8-12
		HO-GE-32-UN-30	35-38	1.1/2	2-12	1.7/8-12

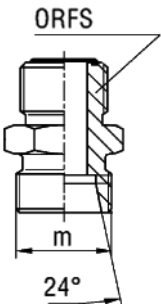
description	pressure [bar]	code (carbon steel)	approx. pipe O.D.		ORFS	G [BSP]
			[mm]	[inch]		
Straight fitting, BSP thread    <b>GAI-B</b>	630	HO-GAI-09-B-04	6	1/4	9/16-18	1/4
		HO-GAI-11-B-04	8-10	5/16-3/8	11/16-16	1/4
		HO-GAI-13-B-04	12	1/2	13/16-16	1/4
		HO-GAI-13-B-06	12	1/2	13/16-16	3/8
	420	HO-GAI-16-B-08	14-15-16	5/8	1-14	1/2
		HO-GAI-19-B-08	18-20	3/4	1.3/16-12	1/2
		HO-GAI-19-B-12	18-20	3/4	1.3/16-12	3/4
		HO-GAI-23-B-16	22-25	7/8-1	1.7/16-12	1
	280	HO-GAI-27-B-20	28-30-32	1.1/4	1.11/16-12	1.1/4
		HO-GAI-32-B-24	35-38	1.1/2	2-12	1.1/2

description	pressure [bar]	code (carbon steel)	approx. pipe O.D.		ORFS	P [NPTF]
			[mm]	[inch]		
Straight fitting, NPTF thread    <b>GAI-N</b>	630	HO-GAI-09-N-04	6	1/4	9/16-18	1/4
		HO-GAI-11-N-04	8-10	5/16-3/8	11/16-16	1/4
		HO-GAI-13-N-04	12	1/2	13/16-16	1/4
		HO-GAI-13-N-06	12	1/2	13/16-16	3/8
	420	HO-GAI-16-N-08	14-15-16	5/8	1-14	1/2
		HO-GAI-19-N-08	18-20	3/4	1.3/16-12	1/2
		HO-GAI-19-N-12	18-20	3/4	1.3/16-12	3/4
		HO-GAI-23-N-16	22-25	7/8-1	1.7/16-12	1
	280	HO-GAI-27-N-20	28-30-32	1.1/4	1.11/16-12	1.1/4
		HO-GAI-32-N-24	35-38	1.1/2	2-12	1.1/2

# HIGH PRESSURE - ORFS connectors

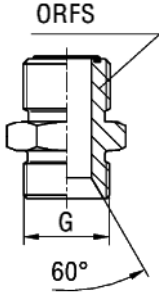
description	pressure [bar]	code (carbon steel)	approx. pipe O.D.				ORFS A	ORFS B
			A [mm]	A [inch]	B [mm]	B [inch]		
Straight connector, ORFS male thread  	630	HO-G-09	6	1/4	6	1/4	9/16-18	9/16-18
		HO-G-11	8-10	5/16-3/8	8-10	5/16-3/8	11/16-16	11/16-16
		HO-G-13	12	1/2	12	1/2	13/16-16	13/16-16
	420	HO-G-16	14-15-16	5/8	14-15-16	5/8	1-14	1-14
		HO-G-19	18-20	3/4	18-20	3/4	1.3/16-12	1.3/16-12
		HO-G-23	22-25	7/8-1	22-25	7/8-1	1.7/16-12	1.7/16-12
	280	HO-G-27	28-30-32	1.1/4	28-30-32	1.1/4	1.11/16-12	1.11/16-12
		HO-G-32	35-38	1.1/2	35-38	1.1/2	2-12	2-12
	630	HO-GR-11-09	8-10	5/16-3/8	6	1/4	11/16-16	9/16-18
		HO-GR-13-11	12	1/2	8-10	3/8-5/16	13/16-16	11/16-16
	420	HO-GR-16-13	14-15-16	5/8	12	1/2	1-14	13/16-16
		HO-GR-19-11	18-20	3/4	8-10	3/8	1.3/16-12	11/16-16
		HO-GR-19-13	18-20	3/4	12	1/2	1.3/16-12	13/16-16
		HO-GR-19-16	18-20	3/4	14-15-16	5/8	1.3/16-12	1-14
		HO-GR-23-19	22-25	7/8-1	18-20	3/4	1.7/16-12	1.3/16-12
	280	HO-GR-27-23	28-30-32	1.1/4	22-25	7/8-1	1.11/16-12	1.7/16-12

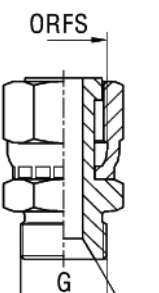
description	pressure [bar]	code (carbon steel)	approx. pipe O.D.		ORFS
			[mm]	[inch]	
Straight bulkhead connector, ORFS male thread  	630	HO-SV-09	6	1/4	9/16-18
		HO-SV-11	8-10	5/16-3/8	11/16-16
		HO-SV-13	12	1/2	13/16-16
	420	HO-SV-16	14-15-16	5/8	1-14
		HO-SV-19	18-20	3/4	1.3/16-12
	280	HO-SV-23	22-25	7/8-1	1.7/16-12
		HO-SV-27	28-30-32	1.1/4	1.11/16-12
		HO-SV-32	35-38	1.1/2	2-12

description	pressure [bar]	code (carbon steel)	approx. pipe O.D.		series	ORFS	M [metric]
			[mm]	[inch]			
Adapter ORFS male thread / DIN 2353  	315	HO-GE-09-M-06L	6	1/4	6L	9/16-18	12x1.5
	630	HO-GE-09-M-06S	6	1/4	6S	9/16-18	14x1.5
	315	HO-GE-09-M-08L	6	1/4	8L	9/16-18	14x1.5
	630	HO-GE-09-M-08S	6	1/4	8S	9/16-18	16x1.5
	315	HO-GE-11-M-10L	8-10	5/16-3/8	10L	11/16-16	16x1.5
	630	HO-GE-11-M-10S	8-10	5/16-3/8	10S	11/16-16	18x1.5
	315	HO-GE-13-M-12L	12	1/2	12L	13/16-16	18x1.5
	630	HO-GE-13-M-12S	12	1/2	12S	13/16-16	20x1.5
	420	HO-GE-16-M-14S	14-15-16	5/8	14S	1-14	22x1.5
	315	HO-GE-16-M-15L	14-15-16	5/8	15L	1-14	22x1.5
	400	HO-GE-16-M-16S	14-15-16	5/8	16S	1-14	24x1.5
	315	HO-GE-19-M-18L	18-20	3/4	18L	1.3/16-12	26x1.5
	400	HO-GE-19-M-20S	18-20	3/4	20S	1.3/16-12	30x2
	160	HO-GE-23-M-22L	22-25	1	22L	1.7/16-12	30x2
	400	HO-GE-23-M-25S	22-25	7/8-1	25S	1.7/16-12	36x2
	160	HO-GE-27-M-28L	28-30-32	1.1/4	28L	1.11/16-12	36x2
	280	HO-GE-27-M-30S	28-30-32	1.1/4	30S	1.11/16-12	42x2
	160	HO-GE-32-M-35L	35-38	1.1/2	35L	2-12	45x2
	280	HO-GE-32-M-38S	35-38	1.1/2	38S	2-12	52x2
	160	HO-GE-32-M-42L	35-38	1.1/2	42L	2-12	52x2

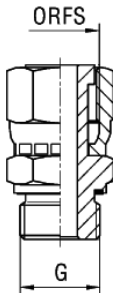


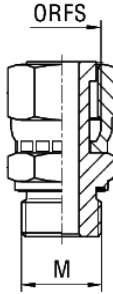
## HIGH PRESSURE - ORFS connectors

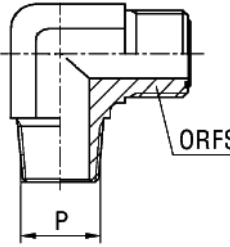
description	pressure [bar]	code (carbon steel)	approx. pipe O.D.		ORFS	G [BSP]
			[mm]	[inch]		
Adapter ORFS male / BSP 60° male thread    <b>GE - B</b>	400	HO-GE-09-B-02	6	1/4	9/16-18	1/8
		HO-GE-09-B-04	6	1/4	9/16-18	1/4
		HO-GE-09-B-06	6	1/4	9/16-18	3/8
		HO-GE-11-B-04	8-10	5/16-3/8	11/16-16	1/4
		HO-GE-11-B-06	8-10	5/16-3/8	11/16-16	3/8
	350	HO-GE-11-B-08	8-10	5/16-3/8	11/16-16	1/2
	400	HO-GE-13-B-04	12	1/2	13/16-16	1/4
		HO-GE-13-B-06	12	1/2	13/16-16	3/8
	350	HO-GE-13-B-08	12	1/2	13/16-16	1/2
	315	HO-GE-13-B-12	12	1/2	13/16-16	3/4
	400	HO-GE-16-B-06	14-15-16	5/8	1-14	3/8
	350	HO-GE-16-B-08	14-15-16	5/8	1-14	1/2
		HO-GE-16-B-10	14-15-16	5/8	1-14	5/8
	315	HO-GE-16-B-12	14-15-16	5/8	1-14	3/4
	350	HO-GE-19-B-08	18-20	3/4	1.3/16-12	1/2
	315	HO-GE-19-B-12	18-20	3/4	1.3/16-12	3/4
	250	HO-GE-19-B-16	18-20	3/4	1.3/16-12	1
	315	HO-GE-23-B-12	22-25	7/8-1	1.7/16-12	3/4
	250	HO-GE-23-B-16	22-25	7/8-1	1.7/16-12	1
	200	HO-GE-23-B-20	22-25	7/8-1	1.7/16-12	1.1/4
		HO-GE-27-B-20	28-30-32	1.1/4	1.11/16-12	1.1/4
	160	HO-GE-32-B-24	35-38	1.1/2	2-12	1.1/2

description	pressure [bar]	code (carbon steel)	approx. pipe O.D.		ORFS	G [BSP]
			[mm]	[inch]		
Adapter ORFS female / BSP 60° male thread    <b>EVGE - B</b>	400	HO-EVGE-09-B-02	6	1/4	9/16-18	1/8
		HO-EVGE-09-B-04	6	1/4	9/16-18	1/4
		HO-EVGE-09-B-06	6	1/4	9/16-18	3/8
		HO-EVGE-11-B-04	8-10	5/16-3/8	11/16-16	1/4
		HO-EVGE-11-B-06	8-10	5/16-3/8	11/16-16	3/8
	350	HO-EVGE-11-B-08	8-10	5/16-3/8	11/16-16	1/2
	400	HO-EVGE-13-B-04	12	1/2	13/16-16	1/4
		HO-EVGE-13-B-06	12	1/2	13/16-16	3/8
	350	HO-EVGE-13-B-08	12	1/2	13/16-16	1/2
	315	HO-EVGE-13-B-12	12	1/2	13/16-16	3/4
	400	HO-EVGE-16-B-06	14-15-16	5/8	1-14	3/8
	350	HO-EVGE-16-B-08	14-15-16	5/8	1-14	1/2
		HO-EVGE-16-B-10	14-15-16	5/8	1-14	5/8
	315	HO-EVGE-16-B-12	14-15-16	5/8	1-14	3/4
	350	HO-EVGE-19-B-08	18-20	3/4	1.3/16-12	1/2
	315	HO-EVGE-19-B-12	18-20	3/4	1.3/16-12	3/4
	250	HO-EVGE-19-B-16	18-20	3/4	1.3/16-12	1
	315	HO-EVGE-23-B-12	22-25	7/8-1	1.7/16-12	3/4
	250	HO-EVGE-23-B-16	22-25	7/8-1	1.7/16-12	1
	200	HO-EVGE-23-B-20	22-25	7/8-1	1.7/16-12	1.1/4
		HO-EVGE-27-B-20	28-30-32	1.1/4	1.11/16-12	1.1/4
	160	HO-EVGE-32-B-24	35-38	1.1/2	2-12	1.1/2

## HIGH PRESSURE - ORFS connectors

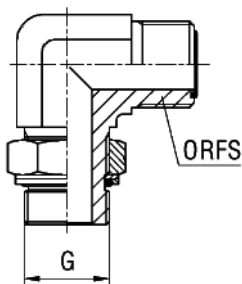
description	pressure [bar]	code (carbon steel)	approx. pipe O.D.		ORFS	G [BSP]
			[mm]	[inch]		
Straight fitting, BSP male thread (elastomeric seal)   <b>EVGE - BE</b>	630	HO-EVGE-09-BE-02	6	1/4	9/16-18	1/8
		HO-EVGE-09-BE-04	6	1/4	9/16-18	1/4
		HO-EVGE-11-BE-04	8-10	5/16-3/8	11/16-16	1/4
		HO-EVGE-11-BE-06	8-10	5/16-3/8	11/16-16	3/8
		HO-EVGE-13-BE-06	12	1/2	13/16-16	3/8
		HO-EVGE-13-BE-08	12	1/2	13/16-16	1/2
	420	HO-EVGE-16-BE-08	14-15-16	5/8	1-14	1/2
		HO-EVGE-19-BE-12	18-20	3/4	1.3/16-12	3/4
		HO-EVGE-19-BE-20	18-20	3/4	1.3/16-12	1.1/4
		HO-EVGE-23-BE-16	22-25	7/8-1	1.7/16-12	1
	280	HO-EVGE-27-BE-20	28-30-32	1.1/4	1.11/16-12	1.1/4
		HO-EVGE-32-BE-24	35-38	1.1/2	2-12	1.1/2

description	pressure [bar]	code (carbon steel)	approx. pipe O.D.		ORFS	M [metric]
			[mm]	[inch]		
Straight fitting, metric male thread (elastomeric seal)   <b>EVGE - ME</b>	350	HO-EVGE-09-ME-10	6	1/4	9/16-18	10x1
	630	HO-EVGE-09-ME-12	6	1/4	9/16-18	12x1.5
		HO-EVGE-11-ME-14	8-10	5/16-3/8	11/16-16	14x1.5
		HO-EVGE-11-ME-16	8-10	5/16-3/8	11/16-16	16x1.5
		HO-EVGE-13-ME-16	12	1/2	13/16-16	16x1.5
		HO-EVGE-13-ME-18	12	1/2	13/16-16	18x1.5
	420	HO-EVGE-16-ME-18	14-15-16	5/8	1-14	18x1.5
		HO-EVGE-16-ME-22	14-15-16	5/8	1-14	22x1.5
		HO-EVGE-19-ME-22	18-20	3/4	1.3/16-12	22x1.5
		HO-EVGE-19-ME-27	18-20	3/4	1.3/16-12	27x2
		HO-EVGE-23-ME-27	22-25	7/8-1	1.7/16-12	27x2
		HO-EVGE-23-ME-33	22-25	7/8-1	1.7/16-12	33x2
	280	HO-EVGE-27-ME-42	28-30-32	11/4	1.11/16-12	42x2
		HO-EVGE-32-ME-48	35-38	11/2	2-12	48x2

description	pressure [bar]	code (carbon steel)	approx. pipe O.D.		ORFS	P [NPTF]
			[mm]	[inch]		
90° elbow nipple, NPTF thread   <b>WE - NT</b>	420	HO-WE-09-NT-02	6	1/4	9/16-18	1/8
	630	HO-WE-09-NT-04	6	1/4	9/16-18	1/4
		HO-WE-09-NT-06	6	1/4	9/16-18	3/8
		HO-WE-11-NT-04	8-10	5/16-3/8	11/16-16	1/4
		HO-WE-11-NT-06	8-10	5/16-3/8	11/16-16	3/8
		HO-WE-11-NT-08	8-10	5/16-3/8	11/16-16	1/2
		HO-WE-13-NT-04	12	1/2	13/16-16	1/4
		HO-WE-13-NT-06	12	1/2	13/16-16	3/8
		HO-WE-13-NT-08	12	1/2	13/16-16	1/2
	420	HO-WE-13-NT-12	12	1/2	13/16-16	3/4
		HO-WE-16-NT-06	14-15-16	5/8	1-14	3/8
		HO-WE-16-NT-08	14-15-16	5/8	1-14	1/2
		HO-WE-16-NT-12	14-15-16	5/8	1-14	3/4
		HO-WE-19-NT-08	18-20	3/4	1.3/16-12	1/2
		HO-WE-19-NT-12	18-20	3/4	1.3/16-12	3/4
		HO-WE-19-NT-16	18-20	3/4	1.3/16-12	1
		HO-WE-23-NT-12	22-25	7/8-1	1.7/16-12	3/4
	280	HO-WE-23-NT-16	22-25	7/8-1	1.7/16-12	1
		HO-WE-27-NT-16	28-30-32	1.1/4	1.11/16-12	1
		HO-WE-27-NT-20	28-30-32	1.1/4	1.11/16-12	1.1/4
		HO-WE-32-NT-20	35-38	1.1/2	2-12	1.1/4
		HO-WE-32-NT-24	35-38	1.1/2	2-12	1.1/2

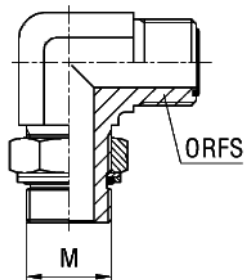
## HIGH PRESSURE - ORFS connectors

description	pressure [bar]	code (carbon steel)	approx. pipe O.D.		ORFS	G [BSP]
			[mm]	[inch]		
Adjustable 90° elbow nipple, BSP thread (O-ring + washer seal)	350	HO-WE-09-BG-02	6	1/4	9/16-18	1/8
	315	HO-WE-09-BG-04	6	1/4	9/16-18	1/4
	250	HO-WE-09-BG-06	6	1/4	9/16-18	3/8
	315	HO-WE-11-BG-04	8-10	5/16-3/8	11/16-16	1/4
		HO-WE-11-BG-06	8-10	5/16-3/8	11/16-16	3/8
		HO-WE-11-BG-08	8-10	5/16-3/8	11/16-16	1/2
		HO-WE-13-BG-04	12	1/2	13/16-16	1/4
	250	HO-WE-13-BG-06	12	1/2	13/16-16	3/8
		HO-WE-13-BG-08	12	1/2	13/16-16	1/2
		HO-WE-13-BG-12	12	1/2	13/16-16	3/4
	315	HO-WE-16-BG-04	14-15-16	5/8	1-14	1/4
	250	HO-WE-16-BG-06	14-15-16	5/8	1-14	3/8
		HO-WE-16-BG-08	14-15-16	5/8	1-14	1/2
		HO-WE-16-BG-12	14-15-16	5/8	1-14	3/4
	200	HO-WE-16-BG-16	14-15-16	5/8	1-14	1
	315	HO-WE-19-BG-04	18-20	3/4	1.3/16-12	1/4
	250	HO-WE-19-BG-08	18-20	3/4	1.3/16-12	1/2
		HO-WE-19-BG-12	18-20	3/4	1.3/16-12	3/4
	200	HO-WE-19-BG-16	18-20	3/4	1.3/16-12	1
	315	HO-WE-23-BG-04	22-25	7/8-1	1.7/16-12	1/4
	250	HO-WE-23-BG-12	22-25	7/8-1	1.7/16-12	3/4
	200	HO-WE-23-BG-16	22-25	7/8-1	1.7/16-12	1
		HO-WE-23-BG-20	22-25	7/8-1	1.7/16-12	1.1/4
		HO-WE-27-BG-16	28-30-32	1.1/4	1.11/16-12	1
		HO-WE-27-BG-20	28-30-32	1.1/4	1.11/16-12	1.1/4
	160	HO-WE-27-BG-24	28-30-32	1.1/4	1.11/16-12	1.1/2
		HO-WE-32-BG-24	35-38	1.1/2	2-12	1.1/2



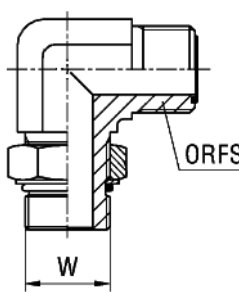
**WE - BG**

description	pressure [bar]	code (carbon steel)	approx. pipe O.D.		ORFS	M [metric]
			[mm]	[inch]		
Adjustable 90° elbow nipple, metric thread (O-ring + washer seal)	315	HO-WE-09-MG-10	6	1/4	9/16-18	10x1
		HO-WE-09-MG-12	6	1/4	9/16-18	12x1.5
		HO-WE-11-MG-14	8-10	5/16-3/8	11/16-16	14x1.5
		HO-WE-11-MG-16	8-10	5/16-3/8	11/16-16	16x1.5
		HO-WE-13-MG-16	12	1/2	13/16-16	16x1.5
		HO-WE-13-MG-18	12	1/2	13/16-16	18x1.5
	250	HO-WE-13-MG-22	12	1/2	13/16-16	22x1.5
	315	HO-WE-16-MG-18	14-15-16	5/8	1-14	18x1.5
	250	HO-WE-16-MG-22	14-15-16	5/8	1-14	22x1.5
		HO-WE-16-MG-27	14-15-16	5/8	1-14	27x2
		HO-WE-19-MG-22	18-20	3/4	1.3/16-12	22x1.5
		HO-WE-19-MG-27	18-20	3/4	1.3/16-12	27x2
	160	HO-WE-19-MG-33	18-20	3/4	1.3/16-12	33x2
	250	HO-WE-23-MG-27	22-25	7/8-1	1.7/16-12	27x2
	160	HO-WE-23-MG-33	22-25	7/8-1	1.7/16-12	33x2
		HO-WE-23-MG-42	22-25	7/8-1	1.7/16-12	42x2
		HO-WE-27-MG-42	28-30-32	1.1/4	1.11/16-12	42x2
		HO-WE-27-MG-48	28-30-32	1.1/4	1.11/16-12	48x2
		HO-WE-32-MG-48	35-38	1.1/2	2-12	48x2

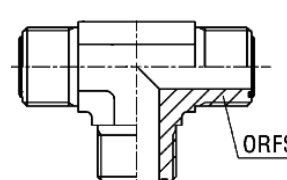


**WE - MG**

## HIGH PRESSURE - ORFS connectors

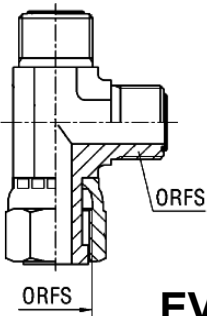
description	pressure [bar]	code (carbon steel)	approx. pipe O.D.		ORFS	W [UNF]
			[mm]	[inch]		
Adjustable 90° elbow nipple, UNF thread (O-ring seal) <div style="text-align: center;">  </div>	420	HO-WE-09-UG-07	6	1/4	9/16-18	7/16-20
		HO-WE-09-UG-09	6	1/4	9/16-18	9/16-18
		HO-WE-09-UG-12	6	1/4	9/16-18	3/4-16
		HO-WE-11-UG-07	8-10	5/16-3/8	11/16-16	7/16-20
		HO-WE-11-UG-09	8-10	5/16-3/8	11/16-16	9/16-18
		HO-WE-11-UG-12	8-10	5/16-3/8	11/16-16	3/4-16
		HO-WE-11-UG-14	8-10	5/16-3/8	11/16-16	7/8-14
		HO-WE-11-UG-17	8-10	5/16-3/8	11/16-16	1.1/16-12
		HO-WE-13-UG-09	12	1/2	13/16-16	9/16-18
		HO-WE-13-UG-12	12	1/2	13/16-16	3/4-16
		HO-WE-13-UG-14	12	1/2	13/16-16	7/8-14
		HO-WE-13-UG-17	12	1/2	13/16-16	1.1/16-12
		HO-WE-16-UG-12	14-15-16	5/8	1-14	3/4-16
		HO-WE-16-UG-14	14-15-16	5/8	1-14	7/8-14
		HO-WE-16-UG-17	14-15-16	5/8	1-14	1.1/16-12
		HO-WE-19-UG-12	18-20	3/4	1.3/16	3/4-16
		HO-WE-19-UG-14	18-20	3/4	1.3/16	7/8-14
		HO-WE-19-UG-17	18-20	3/4	1.3/16-12	1.1/16-12
	380	HO-WE-19-UG-21	18-20	3/4	1.3/16	1.5/16-12
	420	HO-WE-23-UG-17	22-25	7/8-1	1.7/16	1.1/16-12
	380	HO-WE-23-UG-21	22-25	7/8-1	1.7/16-11	1.5/16-12
	280	HO-WE-23-UG-26	22-25	7/8-1	1.7/16	1.5/8-12
		HO-WE-27-UG-21	28-30-32	1.1/4	1.11/16	1.5/16-12
		HO-WE-27-UG-26	28-30-32	1.1/4	1.11/16-12	1.5/8-12
		HO-WE-27-UG-30	28-30-32	1.1/4	1.11/16	1.7/8-12
		HO-WE-32-UG-26	35-38	1.1/2	2-12	1.5/8-12
		HO-WE-32-UG-30	35-38	1.1/2	2-12	1.7/8-12

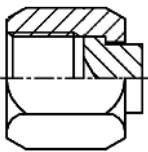
**WE - UG**

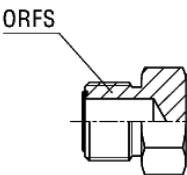
description	pressure [bar]	code (carbon steel)	approx. pipe O.D.		ORFS
			[mm]	[inch]	
Tee ORFS connector <div style="text-align: center;">  </div>	630	HO-T-09	6	1/4	9/16-18
		HO-T-11	8-10	5/16-3/8	11/16-16
		HO-T-13	12	1/2	13/16-16
	420	HO-T-16	14-15-16	5/8	1-14
		HO-T-19	18-20	3/4	1.3/16-12
		HO-T-23	22-25	7/8-1	1.7/16-12
	280	HO-T-27	28-30-32	1.1/4	1.11/16-12
		HO-T-32	35-38	1.1/2	2-12

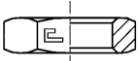
**T**

## HIGH PRESSURE - ORFS connectors

description	pressure [bar]	code (carbon steel)	approx. pipe O.D.		ORFS
			[mm]	[inch]	
Tee adapter L type ORFS male thread / female thread 	630	HO-EVL-09	6	1/4	9/16-18
		HO-EVL-11	8-10	5/16-3/8	11/16-16
		HO-EVL-13	12	1/2	13/16-16
	420	HO-EVL-16	14-15-16	5/8	1-14
		HO-EVL-19	18-20	3/4	1.3/16-12
		HO-EVL-23	22-25	7/8-1	1.7/16-12
	280	HO-EVL-27	28-30-32	1.1/4	1.11/16-12
		HO-EVL-32	35-38	1.1/2	2-12

description	pressure [bar]	code (carbon steel)	approx. pipe O.D.		ORFS
			[mm]	[inch]	
Plug, ORFS, female thread 	630	HO-VKA-09	6	1/4	9/16-18
		HO-VKA-11	8-10	5/16-3/8	11/16-16
		HO-VKA-13	12	1/2	13/16-16
	420	HO-VKA-16	14-15-16	5/8	1-14
		HO-VKA-19	18-20	3/4	1.3/16-12
		HO-VKA-23	22-25	7/8-1	1.7/16-12
	280	HO-VKA-27	28-30-32	1.1/4	1.11/16-12
		HO-VKA-32	35-38	1.1/2	2-12

description	pressure [bar]	code (carbon steel)	approx. pipe O.D.		ORFS
			[mm]	[inch]	
Plug, ORFS, male thread 	630	HO-ROV-09	6	1/4	9/16-18
		HO-ROV-11	8-10	5/16-3/8	11/16-16
		HO-ROV-13	12	1/2	13/16-16
	420	HO-ROV-16	14-15-16	5/8	1-14
		HO-ROV-19	18-20	3/4	1.3/16-12
		HO-ROV-23	22-25	7/8-1	1.7/16-12
	280	HO-ROV-27	28-30-32	1.1/4	1.11/16-12
		HO-ROV-32	35-38	1.1/2	2-12

description	pressure [bar]	code (carbon steel)	approx. pipe O.D.		ORFS
			[mm]	[inch]	
Nut, UNF thread, for bulk- head connectors 	630	HO-MP-09	6	1/4	9/16-18
		HO-MP-11	8-10	5/16-3/8	11/16-16
		HO-MP-13	12	1/2	13/16-16
	420	HO-MP-16	14-15-16	5/8	1-14
		HO-MP-19	18-20	3/4	1.3/16-12
		HO-MP-23	22-25	7/8-1	1.7/16-12
	280	HO-MP-27	28-30-32	1.1/4	1.11/16-12
		HO-MP-32	35-38	1.1/2	2-12

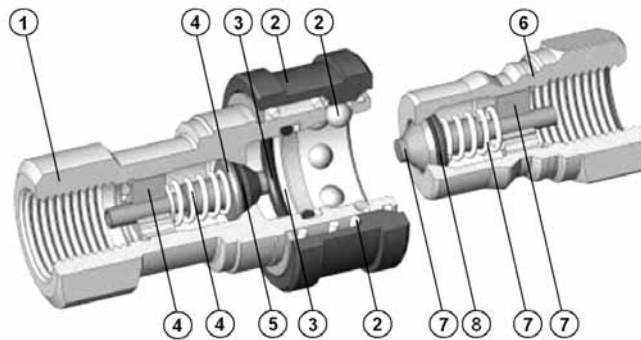
# HIGH PRESSURE - quick release couplings

Quick release couplings solve the problem of quick connection and disconnection of flexible hose assemblies. The connection can be made faster and easier than in the case of standard screwed couplings (threaded, flanged) because it is made by hand, with no tools. Usually, it requires only pushing a plug into a socket. Locking occurs automatically, using the spring mechanism.

The most often the plug is blocked in the socket with steel balls. In many cases connection and disconnection can be made with one hand only ("one hand operation").

The use of quick release couplings facilitates assembly. It enables fast and easy replacement of interchangeable modules of hydraulic systems, saving time and money.

## Construction - basic elements (illustrated by the example of ISO-B quick release double shut-off coupling)



### Socket:

- 1 - body
- 2 - blocking mechanism (sleeve, spring, steel balls)
- 3 - seal (O-ring, stopper ring)
- 4 - valve (valve head, spring, valve holder)
- 5 - valve seal (O-ring)

### Plug:

- 6 - body
- 7 - valve (valve head, spring, valve holder)
- 8 - valve seal (O-ring)

## Types of quick release couplings

straight-through	single shut-off	double shut-off	double shut-off, dry-break (leak-free)
no valves	valve only on supply side (most often in socket)	valves on both socket and plug side	valves on both socket and plug side, (flat surface face - "flat face" and appropriate sealing)

## Standards

Quick release couplings are manufactured according to generally acknowledged standards or according to the manufacturer's standards. The most common in hydraulics:

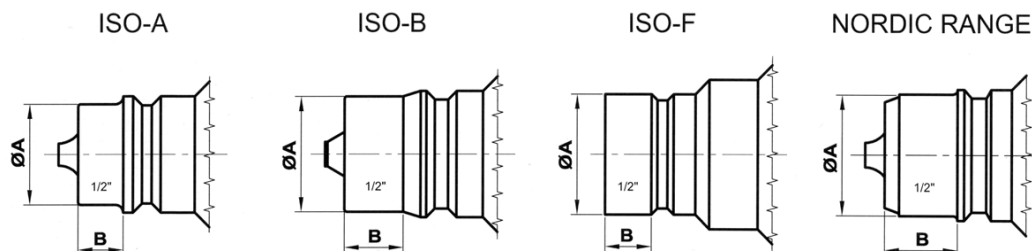
- ISO 7241-1 A (ISO-A)
- ISO 7241-1 B (ISO-B)
- ISO 16028 (ISO-F)

Standards define the dimensional requirements for sockets and plugs, strength requirements (working pressure, bursting pressure) and others (flow rate, connection strength, spillage volume, etc.). Dimensional requirements deal with a plug profile in particular (shape and dimensions). Manufacturing according to the same profile standard ensures so called "interchangeability" and allows connection of sockets and plugs from different producers. However, this connection does not guarantee all functional features of an original set of couplers (socket and plug from the same manufacturer) and should be properly verified.

# HIGH PRESSURE - quick release couplings

## Plug profiles

(according to international and producers standards: NORDIC RANGE, TEMA STANDARD, CEJN 525)



size [inch]	dimensions [mm]							
	ISO-A		ISO-B		ISO-F		NORDIC RANGE	
	A	B	A	B	A	B	A	B
3/16	-	-	10.85	7.9	-	-	9.3	6.8
1/4	11.8	5.6	14.15	9.65	16.15	5.75	11.9	11.8
3/8	17.25	8.9	19.05	12.45	19.7	4.75	19.9	13.7
1/2	20.5	9.3	23.5	12.2	24.5	9.85	24.6	15
5/8	-	-	-	-	27	9.85	-	-
3/4	29.05	16	31.4	18.8	29.9	11.4	32.7	18.5
1	34.3	19.85	37.75	20.6	36	10.9	41	21.5
1.1/4	44.95	25	-	-	-	-	-	-
1.1/2	54.95	30.7	44.45	32.6	-	-	-	-
2	65.05	35.1	63.2	38.1	-	-	-	-

## Material and sealing

The components of quick release couplings are usually made of steel, brass, stainless steel. The choice of proper material is vital for:

- quick release coupling resistance under pressure (also resistance to pulsating pressure and vibrations).
- mechanical wear of the plug and movable components when influenced by friction, resistance to mechanical impact.
- internal corrosion resistance to the medium.
- external corrosion resistance to operation conditions.

In order to obtain properties adequate for certain application, the body of the socket is made of zinc-plated steel, brass (chrome-plated, nickel-plated), or stainless steel. The body of the plug is made of hardened zinc-plated steel, brass or stainless steel, valves made of brass or zinc alloys, balls and springs of appropriate stainless steel.

The O-rings of quick release coupling are made of various elastomeric materials. NBR is a basic material used in hydraulic systems. A socket-plug seal has an additional stopper ring made of PTFE. Quick release couplings of Nordic Range have a double seal (two O-rings) that increases the durability of the sealing.

material	working temp.	characteristics and use of seals
NBR (nitrile)	from -40°C up to +100°C	Basic seal for hydraulics. Resistant to hydraulic oil, mineral oil, fuel (but not biodiesel), water up to +80 °C, glycol, grease, compressed air up to +70 °C, methane, propane, butane, ethanol and methanol.
Viton (FPM / FKM)	from -25°C up to +200°C	Excellent resistance to high temperature, oils, greases, aromatic substances. Resistant to most chemicals. Can be used for steam up to +150 °C.
EPDM	from -40°C up to +150°C	Good resistance to high temperatures. Especially recommended for hot water and steam. Good resistance to brake fluids, glycol and fire resistant hydraulic fluids. Resistant to many of the non-aggressive chemicals. Not suitable for mineral oils and gasoline.
PUR (polyurethane)	from -40°C up to +100°C	Compared to NBR, more resistant to pressure pulsation, but more sensitive to dirt. Mainly used for hydraulic oil.

## HIGH PRESSURE - quick release couplings

medium	seal material			quick release coupling material		
	NBR	Viton	EPDM	steel	SS	brass
oils (hydraulic oil, motor oil, grease)	●	▲	X	●	▲	●
fuels (diesel oil, fuel oil)	▲	●	X	●	▲	●
gases	contact TUBES INTERNATIONAL®			▲	●	●
steam (up to +150°C)	X	●	▲	▲	●	●
water (up to +80°C)	●	▲	▲	▲	●	●
water (over +80°C)	X	●	●	▲	●	●
● - recommended      ▲ - conditional use      X - not recommended						




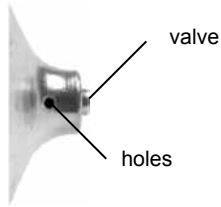
**If a quick release coupling is used for a medium other than hydraulic oil, always contact TUBES INTERNATIONAL® for the proper seal selection!**

### Working pressure

The working pressure of a quick release coupling is its maximum working pressure (including temporary pressure build-up), above which the coupling must not operate. The safety factor is the relation of bursting pressure to the maximum working pressure. In the hydraulic systems the safety factor should be 4:1. The value of bursting pressure, working pressure and safety factor should be defined for both connected and disconnected quick release coupling (closed valves). For the disconnected quick release couplings these values are usually lower.

### Pressure eliminator

The application of a socket or a plug with a pressure eliminator facilitates connection of quick release couplings when residual pressure in the system is high. The eliminator, a tiny release valve with two small holes, is built into the socket or plug. Once the quick release coupling is connected, release valve opens, the medium flows out through the holes causing the drop of the static pressure.

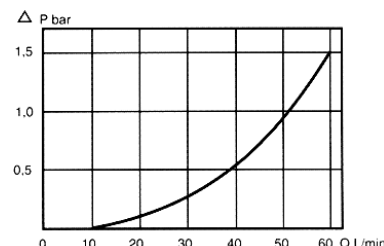
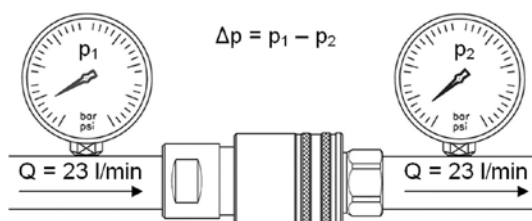
socket and plug without eliminator	valve without eliminator
	
socket and plug with eliminator	valve with eliminator
	



# HIGH PRESSURE - quick release couplings

## Flow

A quick release coupling, the one with a valve in particular, causes pressure loss in an installation transferring fluid. The higher the flow rate  $Q$  (measured in l/min) through a quick release coupling (and so fluid velocity), the bigger the pressure loss  $\Delta p$  (measured in bars), which is the difference of pressure value in the installation in front of and behind the quick release coupling. Experimentally obtained charts of pressure loss for different flow rates are prepared for each type and size of the quick release couplings. For hydraulic quick release couplings the tests are performed with hydraulic oil of approximately 32 cSt viscosity at ambient temperature. The charts of pressure loss  $\Delta p$  or flow rate  $Q$  through the quick release coupling with specified pressure drop (e.g. 1 bar, 2 bar, 4 bar) are provided in the coupling description. The comparison of flow rates is only acceptable when the flow rates of quick release couplings are compared at the same value of pressure drop.



## Protection against accidental disconnection

Disconnection of standard quick release couplings requires backward pull of the plug-locking sleeve in the socket. To prevent accidental disconnection, some of the quick release couplings are equipped with locking sleeve security mechanism preventing backward pull and accidental disconnection.

This feature is implemented by an additional safety locking ring (which needs to be moved in the direction of sleeve and turned) or security pin (safety lock- turning of the sleeve is only possible in a proper position of a cut in the sleeve).

safety locking ring	locking pin
<p>quick release coupling unlocked</p>	<p>quick release coupling unlocked</p>
<p>quick release coupling locked</p>	<p>quick release coupling locked</p>

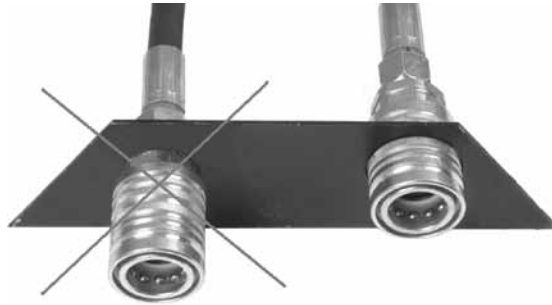
## Air inclusion

When a quick release coupling is connected (disconnected), air inclusion follows to the inside of the installation. This causes disturbances in the system, for example unsynchronised operation of actuators. The amount of air that gets into the system depends on the shape of valves faces. The larger the space between the valves during the connection of a plug with a socket, the more air gets into the system. The smallest air inclusion is specific to "flat-face" quick release couplings.

## HIGH PRESSURE - quick release couplings

### „Push-pull” system

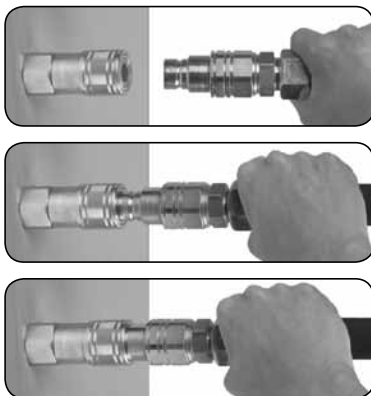
The application of “push-pull” quick release couplings protects flexible hose assemblies from tearing apart in case of accidental strain (e.g. a tractor drives away from a seeder - a mechanical coupler has already been unhooked but hydraulic installation is still connected). The “push-pull” system works properly only if the socket is fixed to the body of equipment (housing) with a knurled locking sleeve (see picture below). When the hose assembly is strained, automatic disconnection of the quick release coupling follows. This prevents damage of the hydraulic installation and possible oil loss. There is also a type of quick release couplings with emergency breakaway function.



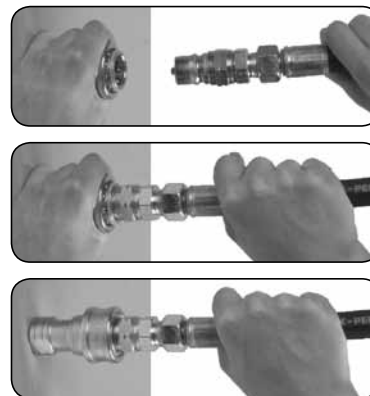
### „One hand operation” - connection and disconnection with one hand

To connect standard quick release coupling, locking sleeve must be pulled back and the plug must be pushed into the socket. In order to increase the ease of handling, some of the quick release couplings are connected (disconnected) with one hand. The connection takes place automatically after only pushing the plug into the socket. In order to disconnect such a coupling, the locking sleeve must be pulled back and the plug will pop out.

One hand operation



Standard



### Leakage

When connecting (disconnecting) a quick release coupling, leakage of medium occurs. The volume of the leakage depends on the shape of a valve face. It ranges from a fraction of millilitre for “flat-face” quick release couplings to a dozen of millilitres for big poppet-type quick release couplings.



# HIGH PRESSURE - quick release couplings

## Failure-free operation - protection against contamination

Hydraulic hose assemblies equipped with quick release couplings are often disconnected for longer periods of time. It often happens e.g. in construction, road and agricultural equipment. The application of blank plugs/caps for sockets and plugs protects quick release couplings against contamination and ensures failure-free operation. Lubricators (lubricating blank plugs) enable operation in the conditions of high contamination and in winter - prevent freezing of quick release couplings

**Blank caps**



**Lubricating blank plugs**



## Assembly of quick release couplings

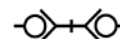
Assembly of a quick release coupling depends on the type of a socket and a plug as well as construction of high pressure system in which quick release coupling is to work. As a standard, plugs are mounted on flexible hose assemblies while the sockets are attached to the body of a machine or equipment.

sealing method	example		
using connectors	<p>TI-ZMW121-22-08</p>	<p>HD-GE-15L-BE-08X</p>	<p>HQ-IA12-M-08G</p>
on 24° cone	<p>TI-ZMW121-22-08</p>		<p>HQ-IA12-M-15L</p>
using metal-rubber seal	<p>TI-ZBZ110-08-08</p>	<p>TI-UDB-08</p>	<p>HQ-IA12-M-08G</p>
sealing on a thread (PTFE tape or anaerobic sealant)	<p>TI-ZBZ130-08-08</p>	<p>UG-TAPE-12</p>	<p>HQ-IA12-M-08G</p>



# HIGH PRESSURE - quick release couplings

## Couplings DIN standard



### DNP, HQ (1/4" ÷ 2")

**Standard:** Producer's standard  
**Applications:** Hydraulics (hydraulic oil)  
**Working press.:** Up to 400 bar (safety factor 4:1)  
**Material:** Galvanized steel  
**Seal:** NBR (from -25°C up to +100°C)  
**Advantages:** One of the least expensive quick release couplings used in agriculture

Standard quick release couplings with dimensions different from ISO-A (except 1/2" size)\* and ISO-B. Used in agricultural machinery mainly.

Socket	size [inch]	female thread size	code	
			DNP	HQ
	1/4	1/4" BSP	DP-PDV1-0606002	HQ-DINV06-F-04G
	3/8	3/8" BSP	DP-PDV1-1010002	HQ-DINV10-F-06G
	1/2	1/2" BSP	DP-PAV1-1313002*	HQ-IA12-F-08G*
	3/4	3/4" BSP	DP-PDV1-2019002	HQ-DINV19-F-12G
	1	1" BSP	DP-PDV1-2525002	HQ-DINV25-F-16G
	1.1/4	1.1/4" BSP	DP-PDV1-3031002	-
	1.1/2	1.1/2" BSP	DP-PDV1-3939002	-
	2	2" BSP	DP-PDV1-5051002	-

Plug	size [inch]	female thread size	code	
			DNP	HQ
	1/4	1/4" BSP	DP-PDV1-0606003	HQ-DINV06-M-04G
	3/8	3/8" BSP	DP-PDV1-1010003	HQ-DINV10-M-06G
	1/2	1/2" BSP	DP-PAV1-1313003*	HQ-IA12-M-08G*
	3/4	3/4" BSP	DP-PDV1-2019003	HQ-DINV19-M-12G
	1	1" BSP	DP-PDV1-2525003	HQ-DINV25-M-16G
	1.1/4	1.1/4" BSP	DP-PDV1-3031003	-
	1.1/2	1.1/2" BSP	DP-PDV1-3939003	-
	2	2" BSP	DP-PDV1-5051003	-

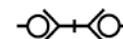
\* - manufactured according to ISO 7241-1 A

## Operating parameters

size [inch]	working pressure [bar]		flow rate at $\Delta p = 3$ bar [l/min]	
	DNP	HQ	DNP	HQ
1/4	400	375	23	22
3/8	350	350	49	58
1/2	250	320	89	94
3/4	250	300	143	165
1	250	275	205	272
1.1/4	220	-	407	-
1.1/2	200	-	650	-
2	100	-	1370	-

# HIGH PRESSURE - quick release couplings

## Couplings according to ISO-A standard



### DNP, HQ (1/4" ÷ 2")

**Standard:** ISO 7241-1 A  
**Applications:** Hydraulics (hydraulic oil)  
**Working press.:** Up to 400 bar (safety factor 4:1)  
**Material:** Galvanized steel  
**Seal:** NBR (from -25°C up to +100°C)  
**Advantages:** Inexpensive quick release couplings

Quick release couplings widely used in agricultural machines. Sockets are available in a standard and "push-pull" type (automatic disconnection in case of accidental strain of a hose assembly). Commonly known as "euro quick release couplings". Interchangeable with ISO-A quick release couplings of different producers.

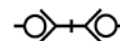
Socket STANDARD type	size [inch]	thread size [inch]	code	
			DNP	HQ
	1/4	1/4 BSP fem.	DP-PAV1-0606002	HQ-IA06-F-04G
	3/8	3/8 BSP fem.	DP-PAV1-1010002	HQ-IA10-F-06G
	1/2	1/2 BSP fem.	DP-PAV1-1313002	HQ-IA12-F-08G
	3/4	3/4 BSP fem.	DP-PAV1-2019002	HQ-IA19-F-12G
	1	1 BSP fem.	DP-PAV1-2525002	HQ-IA25-F-16G
	1.1/4	1.1/4 BSP fem.	DP-PAV1-3031002	HQ-IA32-F-20G
	1.1/2	1.1/2 BSP fem.	DP-PAV1-3939002	HQ-IA40-F-24G
	2	2 BSP fem.	DP-PAV1-5051002	HQ-IA50-F-32G

Plug STANDARD type	size [inch]	thread size [inch]	code	
			DNP	HQ
	1/4	1/4 BSP fem.	DP-PAV1-0606003	HQ-IA06-M-04G
	3/8	3/8 BSP fem.	DP-PAV1-1010003	HQ-IA10-M-06G
	1/2	1/2 BSP fem.	DP-PAV1-1313003	HQ-IA12-M-08G
	3/4	3/4 BSP fem.	DP-PAV1-2019003	HQ-IA19-M-12G
	1	1 BSP fem.	DP-PAV1-2525003	HQ-IA25-M-16G
	1.1/4	1.1/4 BSP fem.	DP-PAV1-3031003	HQ-IA32-M-20G
	1.1/2	1.1/2 BSP fem.	DP-PAV1-3939003	HQ-IA40-M-24G
	2	2 BSP fem.	DP-PAV1-5051003	HQ-IA50-M-32G

Plug STANDARD (DIN 2353)	size [inch]	thread size [mm]	code	
			DNP	HQ
	1/2	M18x1.5 male (12L)	DP-PPV3-1318303	HQ-IA12-M-12L
		M22x1.5 male (15L)	DP-PPV3-1322303	HQ-IA12-M-15L

# HIGH PRESSURE - quick release couplings

## Couplings according to ISO-A standard



Socket PUSH PULL type	size [inch]	thread size	code	
			DNP	HQ
	1/2	1/2" BSP female	DP-PPV1-1313002	HQ-IA12P-F-08G
		M18x1.5 male (12L)	DP-PPV3-1318302	HQ-IA12P-F-12L
		M22x1.5 male (15L)	DP-PPV3-1322302	HQ-IA12P-F-15L
		M22x1.5 male (15L)*	DP-PPV3-1322502	HQ-IA12P-F-15L-B

\* - socket version for panel mounting

Socket blank plug	size [inch]	material	code	
			DNP	HQ
	1/4	PVC or PE	DP-SPAV-06002	HQ-IA06-F-RED
	3/8		DP-SPAV-10002	HQ-IA10-F-RED
	1/2		DP-SPAV-13002	HQ-IA12-F-RED
	3/4		DP-SPAV-20002	HQ-IA19-F-RED
	1		DP-SPAV-25002	HQ-IA25-F-RED
	1.1/4	aluminium	DP-SPAV-30202	-
	1.1/2		DP-SPAV-39202	-
	2		DP-SPAV-50202	-

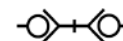
Plug blank cap	size [inch]	material	code	
			DNP	HQ
	1/4	PVC or PE	DP-SPAV-06003	HQ-IA06-M-RED
	3/8		DP-SPAV-10003	HQ-IA10-M-RED
	1/2		DP-SPAV-13003	HQ-IA12-M-RED
	3/4		DP-SPAV-20003	HQ-IA19-M-RED
	1		DP-SPAV-25003	HQ-IA25-M-RED
	1.1/4	aluminium	DP-SPAV-30203	-
	1.1/2		DP-SPAV-39203	-
	2		DP-SPAV-50203	-

## Operating parameters

size [inch]	working pressure [bar]		flow rate at $\Delta p = 3$ bar [l/min]	
	DNP	HQ	DNP	HQ
1/4	350	400	13	12
3/8	350	350	70	49
1/2	250	320	88	88
3/4	250	300	168	147
1	200	250	236	325
1.1/4	200	250	413	518
1.1/2	190	230	595	705
2	160	170	1341	1231

# HIGH PRESSURE - quick release couplings

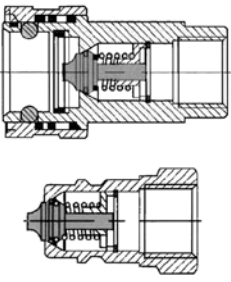
## Couplings according to ISO-A standard

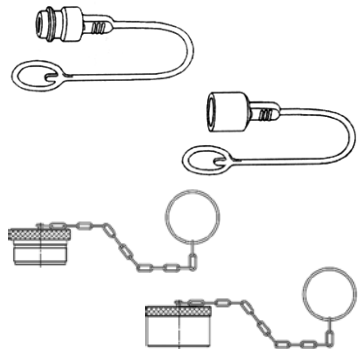


### DRAGON (1/4" ÷ 2")

**Standard:** ISO 7241-1 A  
**Applications:** Hydraulics (hydraulic oil)  
**Working press.:** Up to 350 bar (safety factor 4:1)  
**Material:** Galvanized steel  
**Seal:** NBR (from -20°C up to +100°C)  
**Advantages:** Inexpensive quick release couplings

Quick release couplings widely used in agricultural machines. Commonly known as "euro quick release couplings". Interchangeable with ISO-A quick release couplings of different producers.

Socket and plug	size [inch]	female thread [inch]	code	
			socket	plug
	1/4	1/4 BSP	DG-IA06-F-04G	DG-IA06-M-04G
	3/8	3/8 BSP	DG-IA10-F-06G	DG-IA10-M-06G
	1/2	1/2 BSP	DG-IA12-F-08G	DG-IA12-M-08G
	3/4	3/4 BSP	DG-IA19-F-12G	DG-IA19-M-12G
	1	1 BSP	DG-IA25-F-16G	DG-IA25-M-16G
	1.1/4	1.1/4 BSP	DG-IA32-F-20G	DG-IA32-M-20G
	1.1/2	1.1/2 BSP	DG-IA40-F-24G	DG-IA40-M-24G
	2	2 BSP	DG-IA50-F-32G	DG-IA50-M-32G

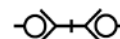
Blank plugs/caps	size [inch]	material	code	
			socket blank plug	plug blank cap
	1/4	PVC or PE	DP-SPAV-06002	DP-SPAV-06003
	3/8		DP-SPAV-10002	DP-SPAV-10003
	1/2		DP-SPAV-13002	DP-SPAV-13003
	3/4		DP-SPAV-20002	DP-SPAV-20003
	1		DP-SPAV-25002	DP-SPAV-25003
	1.1/4	aluminium	DP-SPAV-30202	DP-SPAV-30203
	1.1/2		DP-SPAV-39202	DP-SPAV-39203
	2		DP-SPAV-50202	DP-SPAV-50203

### Operating parameters

size [inch]	working pressure [bar]	flow rate at $\Delta p = 3$ bar [l/min]
1/4	350	16
3/8	315	28
1/2	250	67
3/4	250	98
1	230	225
1.1/4	230	320
1.1/2	180	480
2	130	710

# HIGH PRESSURE - quick release couplings

## Couplings according to ISO-B standard



### DRAGON (1/4" ÷ 1")

- Standard:** ISO 7241-1 B  
**Applications:** Industrial (water, fuel, oil, gas and chemicals)  
**Working press.:** Up to 250 bar (safety factor 4:1)  
**Material:** Brass, AISI 316 steel  
**Seal:** NBR (from -20°C up to +100°C)  
 Viton (from -25°C up to +175°C)  
**Advantages:** Least expensive high pressure quick release coupling made of brass and stainless steel

Quick release couplings intended for application in high pressure industrial installation. Compatible with ISO- B quick release couplings of other producers. Depending on application, the material of the quick release coupling and seal must be chosen.

Socket	size [inch]	female thread [inch]	code	
			brass (NBR)	AISI 316 (Viton)
	1/4	1/4 BSP	DG-IB06-F-04GB	DG-IB06-F-04GSS
	3/8	3/8 BSP	DG-IB10-F-06GB	DG-IB10-F-06GSS
	1/2	1/2 BSP	DG-IB12-F-08GB	DG-IB12-F-08GSS
	3/4	3/4 BSP	DG-IB19-F-12GB	DG-IB19-F-12GSS
	1	1 BSP	DG-IB25-F-16GB	DG-IB25-F-16GSS

Plug	size [inch]	female thread [inch]	code	
			brass (NBR)	AISI 316 (Viton)
	1/4	1/4 BSP	DG-IB06-M-04GB	DG-IB06-M-04GSS
	3/8	3/8 BSP	DG-IB10-M-06GB	DG-IB10-M-06GSS
	1/2	1/2 BSP	DG-IB12-M-08GB	DG-IB12-M-08GSS
	3/4	3/4 BSP	DG-IB19-M-12GB	DG-IB19-M-12GSS
	1	1 BSP	DG-IB25-M-16GB	DG-IB25-M-16GSS

Blank plugs/caps	size [inch]	material	code	
			socket blank plug	plug blank cap
	1/4	PVC	DP-SPBV-06002	DP-SPBV-06003
	3/8		DP-SPBV-10002	DP-SPBV-10003
	1/2		DP-SPBV-13002	DP-SPBV-13003
	3/4		DP-SPBV-20002	DP-SPBV-20003
	1		DP-SPBV-25002	DP-SPBV-25003

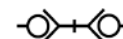
## Operating parameters

size [inch]	working pressure [bar]		flow rate at Δp = 3 bar [l/min]
	brass	AISI 316	
1/4	180	250	16
3/8	180	200	28
1/2	160	200	66
3/4	120	160	97
1	120	125	225



# HIGH PRESSURE - quick release couplings

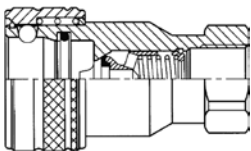
## Couplings according to ISO-B standard

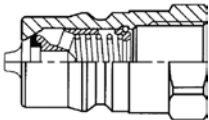


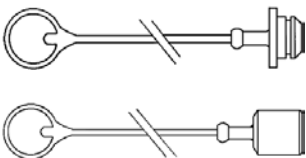
### HANSEN (3/16" ÷ 1")

**Standard:** ISO 7241-1 B  
**Applications:** Hydraulics (hydraulic oil), Industrial (water, steam, fuel, oil, gas and chemicals)  
**Working press.:** Up to 345 bar (safety factor 4:1)  
**Material:** Brass, galvanized steel, stainless steel  
**Seal:** NBR (from -40°C up to +120°C) - standard  
 Viton (from -25°C up to +205°C) - option  
 EPDM (from -45°C up to +150°C) - option  
**Advantages:** Increased resistance to pulsating pressure

Quick release couplings available from 1/2" to 1" made of special hardened steel which ensures increased resistance to pulsating pressure. Depending on application, the material of a quick release coupling and seal must be chosen. Interchangeable with ISO-B quick release couplings of different producers. For pulsating pressure in disconnected couplings, the maximum working pressure must be reduced by 50%.

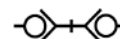
Socket	size [inch]	female thread [inch]	code			
			brass	galvanized steel	AISI 303	AISI 316
	3/16	1/8 NPT	HA-B1H11	HA-1H11	HA-LL1H11	HA-ML1H11
	1/4	1/4 BSP	HA-B2H16BS	HA-2H16BS	HA-LL2H16BS	HA-ML2H16BS
		1/4 NPT	HA-B2H16	HA-2H16	HA-LL2H16	HA-ML2H16
	3/8	3/8 BSP	HA-B3H21BS	HA-3H21BS	HA-LL3H21BS	HA-ML3H21BS
		3/8 NPT	HA-B3H21	HA-3H21	HA-LL3H21	HA-ML3H21
	1/2	1/2 BSP	HA-B4HP26BS	HA-4HP26BS	HA-LL4HP26BS	HA-ML4HP26BS
		1/2 NPT	HA-B4HP26	HA-4HP26	HA-LL4HP26	HA-ML4HP26
	3/4	3/4 BSP	HA-B6HP31BS	HA-6HP31BS	HA-LL6HP31BS	HA-ML6HP31BS
		3/4 NPT	HA-B6HP31	HA-6HP31	HA-LL6HP31	HA-ML6HP31
	1	1 BSP	HA-B8HP36BS	HA-8HP36BS	HA-LL8HP36BS	HA-ML8HP36BS
		1 NPT	HA-B8HP36	HA-8HP36	HA-LL8HP36	HA-ML8HP36

Plug	size [inch]	female thread [inch]	code			
			brass	galvanized steel	AISI 303	AISI 316
	3/16	1/8 NPT	HA-B1K11	HA-1K11	HA-LL1K11	HA-ML1K11
	1/4	1/4 BSP	HA-B2K16BS	HA-2K16BS	HA-LL2K16BS	HA-ML2K16BS
		1/4 NPT	HA-B2K16	HA-2K16	HA-LL2K16	HA-ML2K16
	3/8	3/8 BSP	HA-B3K21BS	HA-3K21BS	HA-LL3K21BS	HA-ML3K21BS
		3/8 NPT	HA-B3K21	HA-3K21	HA-LL3K21	HA-ML3K21
	1/2	1/2 BSP	HA-B4KP26BS	HA-4KP26BS	HA-LL4KP26BS	HA-ML4KP26BS
		1/2 NPT	HA-B4KP26	HA-4KP26	HA-LL4KP26	HA-ML4KP26
	3/4	3/4 BSP	HA-B6KP31BS	HA-6KP31BS	HA-LL6KP31BS	HA-ML6KP31BS
		3/4 NPT	HA-B6KP31	HA-6KP31	HA-LL6KP31	HA-ML6KP31
	1	1 BSP	HA-B8KP36BS	HA-8KP36BS	HA-LL8KP36BS	HA-ML8KP36BS
		1 NPT	HA-B8KP36	HA-8KP36	HA-LL8KP36	HA-ML8KP36

Blank plugs/caps	size [inch]	material	code	
			socket blank plug	plug blank cap
	3/16	PVC	HA-PSDC1HK	HA-PPDC1HK
	1/4		HA-PSDC2HK	HA-PPDC2HK
	3/8		HA-PSDC3HK	HA-PPDC3HK
	1/2		HA-PSDC4HK	HA-PPDC4HK
	3/4		HA-PSDC6HK	HA-PPDC6HK
	1		HA-PSDC8HK	HA-PPDC8HK

# HIGH PRESSURE - quick release couplings

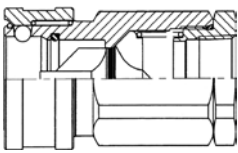
## Couplings according to ISO-B standard

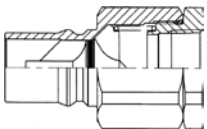



### HANSEN (1.1/4" ÷ 2")

<b>Standard:</b>	ISO 7241-1 B (except size 1.1/4")
<b>Applications:</b>	Hydraulics (hydraulic oil), Industrial (water, steam, fuel, oil, gas and chemicals).
<b>Working press.:</b>	Up to 150 bar (safety factor 4:1)
<b>Material:</b>	Brass, galvanized steel, stainless steel
<b>Seal:</b>	NBR (from -40°C up to +120°C) - standard Viton (from -25°C up to +205°C) - option EPDM (from -45°C up to +150°C) - option
<b>Advantages:</b>	According to: 97/23/WE: module A

Quick release couplings designed and manufactured according to PED (Pressure Equipment Directive) 97/23/WE: Module A. Depending on application, the material and seal of a quick release coupling must be chosen. Interchangeable with ISO-B quick release couplings of different producers. For pulsating pressure in disconnected couplings, the maximum working pressure must be reduced by 50%.

Socket	size [inch]	female thread [inch]	code		
			brass	galvanized steel	AISI 303
	1.1/4	1.1/4 BSP	HA-B10H41BS	HA-10H41BS	HA-LL10H41BS
		1.1/4 NPT	HA-B10H41	HA-10H41	HA-LL10H41
	1.1/2	1.1/2 BSP	HA-B12H46BS	HA-12H46BS	HA-LL12H46BS
		1.1/2 NPT	HA-B12H46	HA-12H46	HA-LL12H46
	2	2 BSP	HA-B20H51BS	HA-20H51BS	HA-LL20H51BS
		2 NPT	HA-B20H51	HA-20H51	HA-LL20H51

Plug	size [inch]	female thread [inch]	code		
			brass	galvanized steel	AISI 303
	1.1/4	1.1/4 BSP	HA-B10K41BS	HA-10K41BS	HA-LL10K41BS
		1.1/4 NPT	HA-B10K41	HA-10K41	HA-LL10K41
	1.1/2	1.1/2 BSP	HA-B12K46BS	HA-12K46BS	HA-LL12K46BS
		1.1/2 NPT	HA-B12K46	HA-12K46	HA-LL12K46
	2	2 BSP	HA-B20K51BS	HA-20K51BS	HA-LL20K51BS
		2 NPT	HA-B20K51	HA-20K51	HA-LL20K51

Blank plug/cap	size [inch]	material	code	
			socket blank plug	plug blank cap
	1.1/2"	aluminium	HA-SDC12HK	HA-PDC12HK
	2"		HA-SDC20HK	HA-PDC20HK

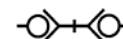
## Operating parameters

size [inch]	working pressure [bar]			flow rate at Δp = 3 bar [l/min]
	brass	galvanized steel	stainless steel	
3/16	207	275	344	13
1/4	186	345	255	29
3/8	152	275	255	50
1/2	155	345	293	84
3/4	138	275	242	188
1	103	275	207	272
1.1/4	83 (37)*	200 (37)*	118 (37)*	442
1.1/2	104 (29)*	150 (29)*	152 (29)*	631
2	49 (21)*	100 (21)*	104 (21)*	1314

\* - maximum working pressure for hazardous fluids

# HIGH PRESSURE - quick release couplings

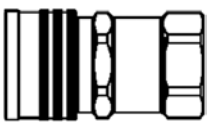
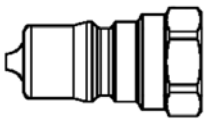
## Couplings according to ISO-B standard

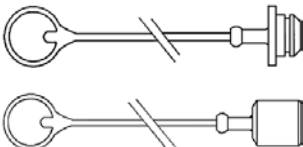


### TEMA (1/4" ÷ 1")

<b>Standard:</b>	ISO 7241-1 B
<b>Applications:</b>	Hydraulics (hydraulic oil) Industrial (water, steam, fuel, oil, gas and chemicals)
<b>Working press.:</b>	Up to 400 bar (safety factor 4:1)
<b>Material:</b>	Chrome-plated brass (socket up to: 1/2") galvanized steel (other items)
<b>Seal:</b>	NBR (from -30°C up to +100°C) Viton (from -25°C up to +200°C)
<b>Advantages:</b>	double O-ring seal - perfect for gases

Quick release couplings (except 1/4" size) equipped with additional double O-ring seal are ideal for gas installations. Both a socket and a plug are also available with a static pressure eliminator. Depending on application, the material and seal of a quick release coupling must be chosen. Interchangeable with ISO-B quick release couplings of different producers.

picture	size [inch]	description	female thread [inch]	seal	socket code	plug code
<b>Socket</b>    <b>Plug</b>  	1/4	with valve	1/4	NBR	TA-H-IB2510	TA-H-IB2520
		with valve and eliminator		Viton	TA-H-IB2510V	TA-H-IB2520V
				NBR	TA-H-IB2511	TA-H-IB2521
				Viton	TA-H-IB2511V	TA-H-IB2521V
	3/8	with valve	3/8	NBR	TA-H-IB3810	TA-H-IB3820
		with valve and eliminator		Viton	TA-H-IB3810V	TA-H-IB3820V
				NBR	TA-H-IB3811	TA-H-IB3821
				Viton	TA-H-IB3811V	TA-H-IB3821V
	1/2	with valve	1/2	NBR	TA-H-IB5010	TA-H-IB5020
		with valve and eliminator		Viton	TA-H-IB5010V	TA-H-IB5020V
				NBR	TA-H-IB5011	TA-H-IB5021
				Viton	TA-H-IB5011V	TA-H-IB5021V
	3/4	with valve	3/4	NBR	TA-H-IB7510	TA-H-IB7520
		with valve and eliminator		Viton	TA-H-IB7510V	TA-H-IB7520V
				NBR	TA-H-IB7511	TA-H-IB7521
				Viton	TA-H-IB7511V	TA-H-IB7521V
	1	with valve	1	NBR	TA-H-IB10010	TA-H-IB10020
		with valve and eliminator		Viton	TA-H-IB10010V	TA-H-IB10020V
				NBR	TA-H-IB10011	TA-H-IB10021
				Viton	TA-H-IB10011V	TA-H-IB10021V

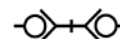
Blank plugs/caps	size [inch]	material	code	
			socket blank plug	plug blank cap
	1/4	PVC	TA-H-IB2516	TA-H-IB2526
	3/8		TA-H-IB3816	TA-H-IB3826
	1/2		TA-H-IB5016	TA-H-IB5026
	3/4		TA-H-IB7516	TA-H-IB7526
	1		TA-H-IB10016	TA-H-IB10026

### Operating parameters

size [inch]	working pressure (coupling connected / disconnected) [bar]	flow rate at Δp = 3 bar [l/min]
1/4	400 / 280	21
3/8	320 / 320	56
1/2	300 / 250	107
3/4	300 / 235	208
1	250 / 185	292

# HIGH PRESSURE - quick release couplings

## Couplings according to ISO-B standard



### PERFECTING (3/16" ÷ 1.1/2")

<b>Standard:</b>	ISO 7241-1 B (except size 1.1/4")
<b>Applications:</b>	Hydraulics (hydraulic oil) Industrial (water, steam, fuel, oil, gas and chemicals)
<b>Working press.:</b>	Up to 345 bar (safety factor 4:1)
<b>Material:</b>	Brass, galvanized steel, stainless steel
<b>Seal:</b>	NBR (from -40°C up to +120°C) - standard Viton (from -30°C up to +205°C) - option EPDM (from -55°C up to +150°C) - option
<b>Advantages:</b>	Double O-ring seal

The socket of a quick release couplings made of brass and stainless steel in sizes above 1" is equipped with a second O-ring instead of a stopper ring. It ensures better sealing. Interchangeable with ISO-B quick release couplings of different producers. Available in AISI 316 steel or with blank caps.

Socket	size [inch]	female thread [inch]	code		
			brass	galvanized steel	AISI 303
 (from 3/16" up to 1")	3/16	1/8 NPTF	PC-1HF1-B	PC-1HF1	PC-1HF1-S
	1/4	1/4 BSP	PC-2HBF2-B	PC-2HBF2	PC-2HBF2-S
 (from 1.1/4" up to 1.1/2")	1/4	1/4 NPTF	PC-2HF2-B	PC-2HF2	PC-2HF2-S
	3/8	3/8 BSP	PC-3HBF3-B	PC-3HBF3	PC-3HBF3-S
	3/8	3/8 NPTF	PC-3HF3-B	PC-3HF3	PC-3HF3-S
	1/2	1/2 BSP	PC-4HBF4-B	PC-4HBF4	PC-4HBF4-S
	1/2	1/2 NPTF	PC-4HF4-B	PC-4HF4	PC-4HF4-S
	3/4	3/4 BSP	PC-6HBF6-B	PC-6HBF6	PC-6HBF6-S
	3/4	3/4 NPTF	PC-6HF6-B	PC-6HF6	PC-6HF6-S
	1	1 BSP	PC-8HBF8-B	PC-8HBF8	PC-8HBF8-S
	1	1 NPTF	PC-8HF8-B	PC-8HF8	PC-8HF8-S
	1.1/4	1.1/4 BSP	PC-10HBF10-B	PC-10HBF10	PC-10HBF10-S
	1.1/4	1.1/4 NPT	PC-10HF10-B	PC-10HF10	PC-10HF10-S
	1.1/2	1.1/2 BSP	PC-12HBF12-B	PC-12HBF12	PC-12HBF12-S
	1.1/2	1.1/2 NPT	PC-12HF12-B	PC-12HF12	PC-12HF12-S

Plug	size [inch]	female thread [inch]	code		
			brass	galvanized steel	AISI 303
 (from 3/16" up to 1")	3/16	1/8 NPTF	PC-H1F1-B	PC-H1F1	PC-H1F1-S
	1/4	1/4 BSP	PC-H2BF2-B	PC-H2BF2	PC-H2BF2-S
 (from 1.1/4" up to 1.1/2")	1/4	1/4 NPTF	PC-H2F2-B	PC-H2F2	PC-H2F2-S
	3/8	3/8 BSP	PC-H3BF3-B	PC-H3BF3	PC-H3BF3-S
	3/8	3/8 NPTF	PC-H3F3-B	PC-H3F3	PC-H3F3-S
	1/2	1/2 BSP	PC-H4BF4-B	PC-H4BF4	PC-H4BF4-S
	1/2	1/2 NPTF	PC-H4F4-B	PC-H4F4	PC-H4F4-S
	3/4	3/4 BSP	PC-H6BF6-B	PC-H6BF6	PC-H6BF6-S
	3/4	3/4 NPTF	PC-H6F6-B	PC-H6F6	PC-H6F6-S
	1	1 BSP	PC-H8BF8-B	PC-H8BF8	PC-H8BF8-S
	1	1 NPTF	PC-H8F8-B	PC-H8F8	PC-H8F8-S
	1.1/4	1.1/4 BSP	PC-H10BF10-B	PC-H10BF10	PC-H10BF10-S
	1.1/4	1.1/4 NPT	PC-H10F10-B	PC-H10F10	PC-H10F10-S
	1.1/2	1.1/2 BSP	PC-H12BF12-B	PC-H12BF12	PC-H12BF12-S
	1.1/2	1.1/2 NPT	PC-H12F12-B	PC-H12F12	PC-H12F12-S

## Operating parameters

size [inch]	working pressure [bar]			flow rate at Δp = 3 bar [l/min]
	brass	galvanized steel	AISI 303	
3/16	207	275	241	16
1/4	207	345	241	23
3/8	207	275	241	55
1/2	172	275	241	83
3/4	138	275	207	151
1	103	275	138	260
1.1/4	69	172	138	476
1.1/2	69	172	103	642

## HIGH PRESSURE - quick release couplings

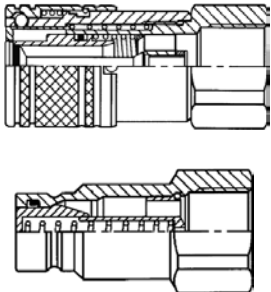
### Dry break couplings according to ISO-F standard




#### DNP PLT1 (1/4" ÷ 1.1/2")

<b>Standard:</b>	ISO 16028 (except size 1.1/2")
<b>Applications:</b>	Hydraulics (hydraulic oil)
<b>Working press.:</b>	Up to 300 bar (safety factor 4:1)
<b>Material:</b>	Galvanized steel
<b>Seal:</b>	NBR (from -25°C up to +100°C)
<b>Advantages:</b>	Inexpensive dry-break quick release couplings

Dry-break, "flat-face" quick release couplings in an economical version. Mainly used in construction machinery. Sockets have safety locking pins preventing accidental disconnection. One hand operation. Interchangeable with ISO-F quick release couplings of different producers.

Socket and plug	size [inch]	female thread [inch]	code	
			socket	plug
	1/4	1/4 BSP	DP-PLT1-0606002	DP-PLT1-0606003
	3/8	3/8 BSP	DP-PLT1-1310002	DP-PLT1-1310003
		1/2 BSP	DP-PLT1-1313002	DP-PLT1-1313003
	1/2	1/2 BSP	DP-PLT1-2013002	DP-PLT1-2013003
		3/4 BSP	DP-PLT1-2019002	DP-PLT1-2019003
	3/4	3/4 BSP	DP-PLT1-2519002	DP-PLT1-2519003
		1 BSP	DP-PLT1-2525002	DP-PLT1-2525003
	1	1.1/4 BSP	DP-PLT1-3031002	DP-PLT1-3031003
	1.1/2	1.1/2 BSP	DP-PLT1-3939002	DP-PLT1-3939003

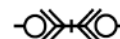
Blank plugs/caps	size [inch]	material	code	
			socket blank plug	plug blank cap
	1/4	PVC	DP-SPLT-06002	DP-SPLT-06003
	3/8		DP-SPLT-13002	DP-SPLT-13003
	1/2		DP-SPLT-20002	DP-SPLT-20003
	3/4		DP-SPLT-25002	DP-SPLT-25003
	1		DP-SPLT-30002	DP-SPLT-30003

#### Operating parameters

size [inch]	working pressure [bar]	flow rate at $\Delta p = 3$ bar [l/min]
1/4	300	24
3/8	250	54
1/2	250	98
3/4	250	228
1	250	300
1.1/2	250	650

# HIGH PRESSURE - quick release couplings

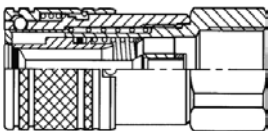
## Dry break couplings according to ISO-F standard

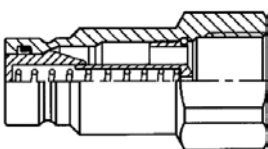


### CEJN X64/X65, DNP PLT4/PLK4, HQ IF (3/16" ÷ 1.1/2")

<b>Standard:</b>	ISO 16028 (except size 3/16" and 1.1/2")
<b>Applications:</b>	Hydraulics (hydraulic oil) Industrial
<b>Working press.:</b>	Up to: 720 bar
<b>Material:</b>	Galvanized steel
<b>Seal:</b>	NBR (from -25°C up to +100°C) - standard Viton (from -15°C up to +200°C) - option
<b>Advantages:</b>	Dry break, increased resistance to corrosion (HQ, CJ quick release couplings)

Dry break, "flat face" quick release couplings designed mainly for construction equipment in which high pressure peaks occur. HQ and CJ quick release couplings have zinc-nickel plated coating which provides several times better resistance to corrosion than zinc-plated one. Sockets have a safety locking pin preventing accidental disconnection. A plug with a static pressure eliminator is also available. One hand operation. Depending on application, the seal material must be chosen. Interchangeable with ISO-F quick release couplings of different producers.

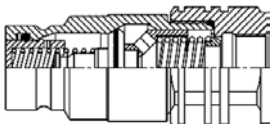
Socket	size [inch]	female thread [inch]	code		
			CEJN X65	DNP PLT4	HQ IF
	3/16	1/8 BSP	CJ-H-101651201	DP-PLT4-0404112	-
	1/4	1/4 BSP	CJ-H-102651202	DP-PLT4-0606112	HQ-IF06-F-04G
	3/8	3/8 BSP	CJ-H-103651204	DP-PLT4-1310112	HQ-IF10-F-06G
		1/2 BSP	CJ-H-103651205	DP-PLT4-1313112	HQ-IF10-F-08G
	1/2	1/2 BSP	CJ-H-105651205	DP-PLT4-2013112	HQ-IF12-F-08G
		3/4 BSP	CJ-H-105651207	DP-PLT4-2019112	HQ-IF12-F-12G
	5/8	3/4 BSP	CJ-H-106651201	DP-PLT4-2219112	HQ-IF16-F-12G
	3/4	3/4 BSP	CJ-H-107651201	DP-PLT4-2519112	HQ-IF19-F-12G
		1 BSP	CJ-H-107651203	DP-PLT4-2525112	HQ-IF19-F-16G
	1	1 BSP	CJ-H-100651203	DP-PLT4-3025112	-
		1.1/4 BSP	CJ-H-100651204	DP-PLT4-3031112	HQ-IF25-F-20G
	1.1/2	1.1/2 BSP	-	-	HQ-IF40-F-24G


Plug	size [inch]	female thread [inch]	code		
			CEJN X65	DNP PLT4	HQ IF
	3/16	1/8 BSP	CJ-H-101656201	DP-PLT4-0404113	-
	1/4	1/4 BSP	CJ-H-102656202	DP-PLT4-0606113	HQ-IF06-M-04G
	3/8	3/8 BSP	CJ-H-103656204	DP-PLT4-1310113	HQ-IF10-M-06G
		1/2 BSP	CJ-H-103656205	DP-PLT4-1313113	HQ-IF10-M-08G
	1/2	1/2 BSP	CJ-H-105656205	DP-PLT4-2013113	HQ-IF12-M-08G
		3/4 BSP	CJ-H-105656207	DP-PLT4-2019113	HQ-IF12-M-12G
	5/8	3/4 BSP	CJ-H-106656201	DP-PLT4-2219113	HQ-IF16-M-12G
	3/4	3/4 BSP	CJ-H-107656201	DP-PLT4-2519113	HQ-IF19-M-12G
		1 BSP	CJ-H-107656203	DP-PLT4-2525113	HQ-IF19-M-16G
	1	1 BSP	CJ-H-100656203	DP-PLT4-3025113	-
		1.1/4 BSP	CJ-H-100656204	DP-PLT4-3031113	HQ-IF25-M-20G
	1.1/2	1.1/2 BSP	-	-	HQ-IF40-M-24G


# HIGH PRESSURE - quick release couplings

## Dry break couplings according to ISO-F standard



Plug with pressure eliminator	size [inch]	female thread [inch]	code		
			CEJN X64	DNP PLK4	HQ IFP
	1/4	1/4 BSP	CJ-H-102646202	DP-PLK4-0606113	-
	3/8	3/8 BSP	CJ-H-103646204	DP-PLK4-1310113	HQ-IFP10-M-06G
		1/2 BSP	CJ-H-103646205	DP-PLK4-1313113	HQ-IFP10-M-08G
	1/2	1/2 BSP	CJ-H-105646205	DP-PLK4-2013113	HQ-IFP12-M-08G
		3/4 BSP	CJ-H-105646207	DP-PLK4-2019113	-
	5/8	3/4 BSP	CJ-H-106646201	DP-PLK4-2219113	-
	3/4	3/4 BSP	CJ-H-107646201	DP-PLK4-2519113	-
		1 BSP	CJ-H-107646203	DP-PLK4-2525113	HQ-IFP19-M-16G
	1	1 BSP	-	DP-PLK4-3025113	-
		1.1/4 BSP	-	DP-PLK4-3031113	-

Socket blank plug	size [inch]	material	code		
			CEJN	DNP	HQ
	3/16	PVC	CJ-H-091651000	-	-
	1/4		CJ-H-092651000	DP-SPLT-06002	HQ-IF06-F-RED
	3/8		CJ-H-093651000	DP-SPLT-13002	HQ-IF10-F-RED
	1/2		CJ-H-095651000	DP-SPLT-20002	HQ-IF12-F-RED
	5/8		CJ-H-096651000	-	HQ-IF16-F-RED
	3/4		CJ-H-097651000	DP-SPLT-25002	HQ-IF19-F-RED
	1		-	DP-SPLT-30002	HQ-IF25-F-RED

<div>Plug blank cap</div> 	size [inch]	material	code		
			CEJN	DNP	HQ
	3/16	PVC	CJ-H-091651050	-	-
	1/4		CJ-H-092651050	DP-SPLT-06003	HQ-IF06-M-RED
	3/8		CJ-H-093651050	DP-SPLT-13003	HQ-IF10-M-RED
	1/2		CJ-H-095651050	DP-SPLT-20003	HQ-IF12-M-RED
	5/8		CJ-H-096651050	-	HQ-IF16-M-RED
	3/4		CJ-H-097651050	DP-SPLT-25003	HQ-IF19-M-RED
	1		-	DP-SPLT-30003	HQ-IF25-M-RED

## Operating parameters

size [inch]	working / bursting pressure * [bar]				flow rate at $\Delta p = 3$ bar [l/min]					
	CEJN	DNP		HOLMBURY	CEJN		DNP		HOLMBURY	
		PLT4	PLK4	IF	X65	X64	PLT4	PLK4	IF	IFP
3/16	720 / 1800	500 / 2500	-	-	7.5	-	10.5	-	-	-
1/4	500 / 1500	400 / 1900	400 / 1900	400 / 1700	24	20	24	28	30	-
3/8	400 / 1200	350 / 1600	350 / 1400	350 / 1500	44	44	66	44	67	58
1/2	400 / 1200	350 / 1700	350 / 1400	350 / 1200	93	77	100	90	122	122
5/8	400 / 1200	350 / 1500	350 / 1400	350 / 1200	139	116	128	150	188	-
3/4	400 / 1200	350 / 1800	300 / 1200	350 / 1450	188	171	232	180	290	204
1	350 / 1200	350 / 1500	300 / 1200	260 / 800	330	290	300	232	382	-
1.1/2	-	-	-	250 / 1100	-	-	-	-	1200	-

\* - the value of bursting pressure is given for a connected quick release coupling.

## HIGH PRESSURE - quick release couplings

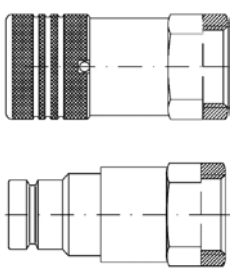
### Dry break couplings according to ISO-F standard

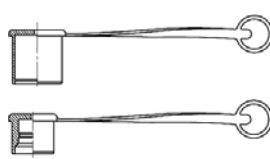


#### PH IF (1/4" ÷ 2")

<b>Standard:</b>	ISO 16028 (to the size of 1 ")
<b>Applications:</b>	Hydraulics (hydraulic oil) Industrial (water, steam, fuel, oil, gas and chemicals)
<b>Working press.:</b>	Up to 315 bar (safety factor 4:1)
<b>Material:</b>	AISI 316 Ti steel
<b>Seal:</b>	Viton (from -20°C up to +200°C)
<b>Advantages:</b>	Made of stainless steel

Dry break, "flat face" quick release couplings are intended for application in industry and high pressure hydraulics. A sockets has a safety locking pin preventing accidental disconnection. One hand operation. Interchangeable with ISO-F quick release couplings of different producers.

Socket and plug	size [inch]	female thread [inch]	code	
			socket	plug
	1/4	1/4 BSP	PH-IF06-F-04G-SS	PH-IF06-M-04G-SS
	3/8	3/8 BSP	PH-IF10-F-06G-SS	PH-IF10-M-06G-SS
	1/2	1/2 BSP	PH-IF12-F-08G-SS	PH-IF12-M-08G-SS
	5/8	3/4 BSP	PH-IF16-F-12G-SS	PH-IF16-M-12G-SS
	3/4	1 BSP	PH-IF19-F-16G-SS	PH-IF19-M-16G-SS
	1	1.1/4 BSP	PH-IF25-F-20G-SS	PH-IF25-M-20G-SS
	1.1/2	1.1/2 BSP	PH-IF40-F-24G-SS	PH-IF40-M-24G-SS
	2	2 BSP	PH-IF50-F-32G-SS	PH-IF50-M-32G-SS

Blank plugs/caps	size [inch]	material	code	
			socket blank plug	plug blank cap
	1/4	PVC	HQ-IF06-F-RED	HQ-IF06-M-RED
	3/8		HQ-IF10-F-RED	HQ-IF10-M-RED
	1/2		HQ-IF12-F-RED	HQ-IF12-M-RED
	5/8		HQ-IF16-F-RED	HQ-IF16-M-RED
	3/4		HQ-IF19-F-RED	HQ-IF19-M-RED
	1		HQ-IF25-F-RED	HQ-IF25-M-RED

#### Operating parameters

size [inch]	working pressure [bar]	flow rate at Δp = 3 bar [l/min]
1/4	315	29
3/8	250	45
1/2	250	103
5/8	250	158
3/4	250	194
1	200	270
1.1/2	90	758
2	60	1256



# HIGH PRESSURE - quick release couplings

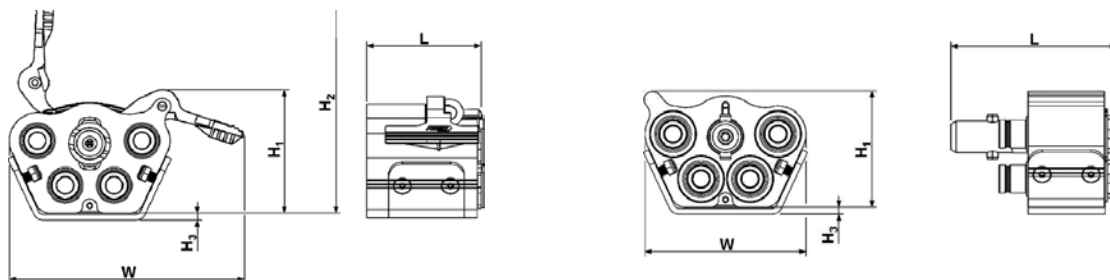
## Multiple coupling system







### CEJN Multi-X (3/8" ÷ 3/4")

<b>Standard:</b>	ISO 16028
<b>Applications:</b>	Hydraulics (hydraulic oil)
<b>Working press.:</b>	Up to: 350 bar - feed (safety factor 3.4:1), Up to 50 bar - return
<b>Material:</b>	Components made of galvanized steel, anodized aluminium, zinc and brass
<b>Seal:</b>	NBR (from -30°C up to +100°C)
<b>Advantages:</b>	Connection of several quick release couplings at the same time

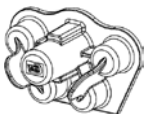

CEJN Multi-X is a user friendly, multiple coupling system designed for the most challenging working conditions. Allows to connect 2 or 4 hose assemblies at the same time. A socket part is equipped with an assembly plate necessary to attach the multi coupling system to the machine's body. Plugs are equipped with a pressure eliminator which allows to connect the system when there is static pressure in the installation. Hose assemblies are connected with the socket and plug part of the multi coupling system using WEO system which prevents twisting of hoses.





Socket plate	coupling size	WEO coupling size	L [mm]	W [mm]	H1 [mm]	H2 [mm]	H3 [mm]	code
	2 x 3/8"	2 x 1/2"	83	168	70	138	5	CJ-H-109322000
	2 x 1/2"	2 x 3/4"	98	176	79	139	5	CJ-H-109322001
	4 x 3/8"	4 x 1/2"	83	168	88	155	5	CJ-H-109323000
	2 x 3/8" 2 x 1/2"	2 x 1/2" 2 x 3/4"	98	176	99	159	5	CJ-H-109324000
	4 x 1/2"	4 x 3/4"	98	176	99	159	5	CJ-H-109324001
	2 x 1/2" 2 x 3/4"	4 x 3/4"	120	214	107	170	5	CJ-H-109325000
Plug plate	coupling size	WEO coupling size	L [mm]	W [mm]	H1 [mm]	H2 [mm]	H3 [mm]	code
	2 x 3/8"	2 x 3/8"	116	116	66	-	5	CJ-H-109322050
	2 x 1/2"	2 x 1/2"	138	132	73	-	5	CJ-H-109322051
	4 x 3/8"	4 x 3/8"	116	116	83	-	5	CJ-H-109323050
	2 x 3/8" 2 x 1/2"	2 x 3/8" 2 x 1/2"	138	132	93	-	5	CJ-H-109324050
	4 x 1/2"	4 x 1/2"	138	132	93	-	5	CJ-H-109324051
	2 x 1/2" 2 x 3/4"	2 x 1/2" 2 x 3/4"	182	179	97	-	5	CJ-H-109325050

## HIGH PRESSURE - quick release couplings

### Multiple coupling system

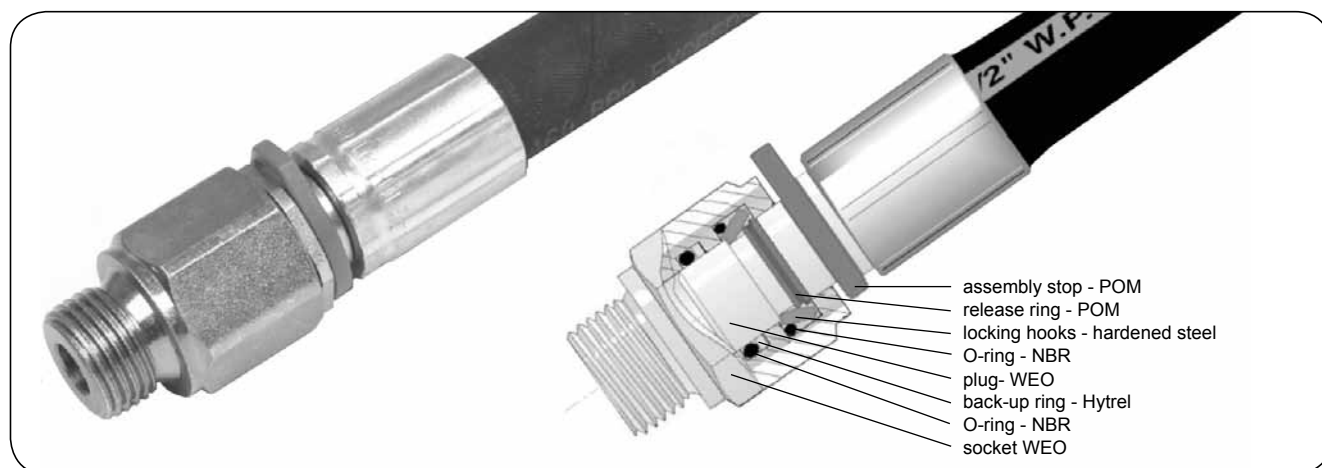
Blank plug/caps  (plug part)  (socket part)	coupling size [inch]	material	code	
			plug blank cap	socket blank cap
	2 x 3/8	PVC	CJ-H-099321050	CJ-H-099321000
	2 x 1/2		CJ-H-099321052	CJ-H-099321002
	4 x 3/8		CJ-H-099321051	CJ-H-099321001
	2 x 3/8 2 x 1/2		CJ-H-099321053	CJ-H-099321003
	4 x 1/2		CJ-H-099321053	CJ-H-099321003
	2 x 1/2 2 x 3/4		CJ-H-099321055	CJ-H-099321005

Adapter WEO - JIC 	WEO size [inch]	thread size [inch]	code
	3/8	9/16 - 18 UNF	CJ-H-147270609
	1/2	3/4 - 16 UNF	CJ-H-147270812
	3/4	1.1/16 - 12 UNF	CJ-H-147271217

Adapter WEO - BSP 	WEO size [inch]	thread size [inch]	code
	3/8	3/8 BSP	CJ-H-147240606
	1/2	1/2 BSP	CJ-H-147240808
	3/4	3/4 BSP	CJ-H-147241212

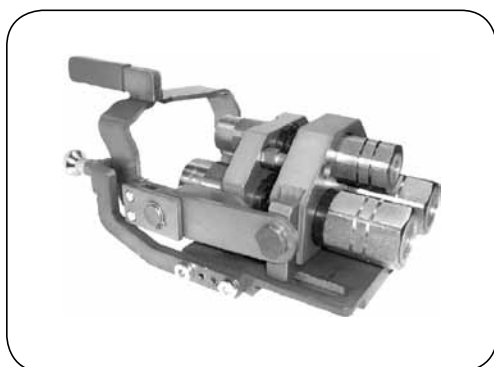
### WEO - connection example

WEO system allows to assemble hydraulic hoses without the use of tools and spanners. The only tool needed is a screwdriver. It is an ideal solution in applications where there is not enough space to assemble the hoses in a traditional way. WEO system significantly reduces assembly time. After connection of a plug with a socket, the plug can align itself (swivel movement), what prevents hose kinking during operation.



# HIGH PRESSURE - quick release couplings

## Multiple coupling system

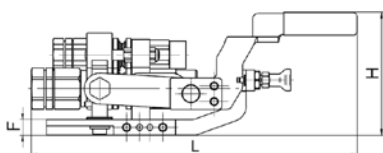


### PISTER PMK (3/8" ÷ 3/4")

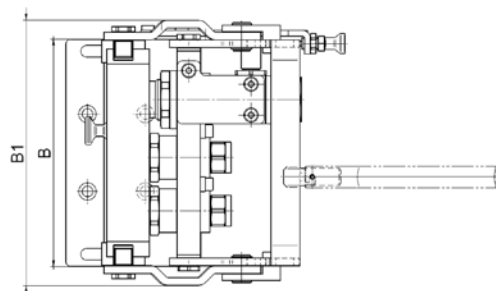
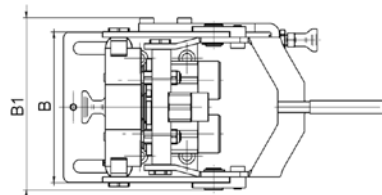
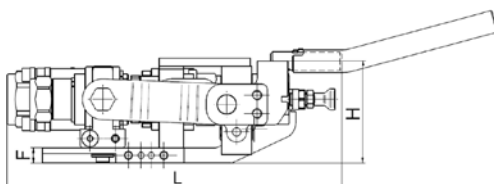
<b>Standard:</b>	Producer's standard
<b>Applications:</b>	Hydraulics (hydraulic oil)
<b>Working press.:</b>	Up to 450 bar
<b>Material:</b>	Zinc-nickel plated steel
<b>Seal:</b>	NBR (from -20°C up to +60°C)
<b>Advantages:</b>	Simultaneous connection of several couplings

Robust PISTER PMK multicouplings intended for heavy duty operation. Possible connection of up to three hose assemblies simultaneously. The zinc-nickel coating is significantly more resistant to corrosion, than regular zinc-plating. The plug side serves as the housing of the multicoupling. The socket side is available as an exchangeable plate exclusively. There are two types of multicouplings: type 1 - for diggers up to 8 tons (3/8" and 1/2") or 16 tons (3/4"), type 2 - for diggers up to 30 tons.

1 type



2 type

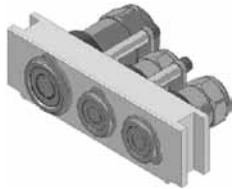




picture	type	couplings size [inch]	thread connections [inch]	B [mm]	B1 [mm]	F [mm]	H [mm]	L [mm]	code
	1	2 x 1/2	2 x 3/4 BSP	140	161	15	75	311	PI-PMK-13-13-1
	1	2 x 1/2 1 x 3/8	2 x 3/4 BSP 1 x 3/8 BSP	140	160	15	119	315	PI -PMK-13-10-13-1
	1	2 x 3/4	2 x 1 BSP	165	204	15	100	341	PI -PMK-20-20-1
	2	1 x 3/4 1 x 1/2	1 x 1 BSP 1 x 1/2 BSP	165	204	15	100	320	PI -PMK-20HV-13-2*
	2	1 x 1/2 1 x 3/4	1 x 1/2 BSP 1 x 1 BSP	165	204	15	100	320	PI -PMK-13-20HV-2*
	2	2 x 3/4	2 x 1 BSP	165	204	15	100	320	PI -PMK-20HV-20HV-2*
	2	2 x 1/2 1 x 3/4	2 x 1/2 BSP 1 x 1 BSP	235	274	15	100	320	PI -PMK-13-13-20HV-2*
	2	1 x 3/4 2 x 1/2	1 x 1 BSP 2 x 1/2 BSP	235	274	15	100	320	PI -PMK-20HV-13-13-2*
	2	2 x 3/4 1 x 1/2	2 x 1 BSP 1 x 1/2 BSP	235	274	15	100	320	PI -PMK-20HV-13-20HV-2*

\* - 3/4" coupling has an additional hydraulic locking device to prevent accidental disconnection during operation.

## HIGH PRESSURE - quick release couplings

### Multiple coupling system

picture	type	couplings size [inch]	thread connections [inch]	code
	1	2 x 1/2	2 x 3/4 BSP	PI -WP-13-13-1
	1	2 x 1/2 1 x 3/8	2 x 3/4 BSP 1 x 3/8 BSP	PI -WP-13-10-13-1
	1	2 x 3/4	2 x 1 BSP	PI -WP-20-20-1
	2	1 x 3/4 1 x 1/2	1 x 1 BSP 1 x 1/2 BSP	PI -WP-20-13-2
	2	1 x 1/2 1 x 3/4	1 x 1/2 BSP 1 x 1 BSP	PI -WP-13-20-2
	2	2 x 3/4	2 x 1 BSP	PI -WP-20-20-2
	2	2 x 1/2 1 x 3/4	2 x 1/2 BSP 1 x 1 BSP	PI -WP-13-13-20-2
	2	1 x 3/4 2 x 1/2	1 x 1 BSP 2 x 1/2 BSP	PI -WP-20-13-13-2
	2	2 x 3/4 1 x 1/2	2 x 1 BSP 1 x 1/2 BSP	PI -WP-20-13-20-2
	1	1 x cap 1 x 1/2	1 x 3/4 BSP	PI -WP-13SK-13-1
	1	1 x 1/2 1 x cap	1 x 3/4 BSP	PI -WP-13-13SK-1
	1	1 x cap 1 x 3/4	1 x 1 BSP	PI -WP-20SK-20-1
	1	1 x 3/4 1 x cap	1 x 1 BSP	PI -WP-20-20SK-1
	2	1 x cap 1 x 3/4	1 x 1 BSP	PI -WP-20-13SK-2
	2	1 x 3/4 1 x cap	1 x 1 BSP	PI -WP-13SK-20-2
	2	1 x cap 1 x 1/2 1 x 3/4	1 x 1/2 BSP 1 x 1 BSP	PI -WP-13SK-13-20-2
	2	2 x cap 1 x 3/4	1 x 1 BSP	PI -WP-13SK-13SK-20-2
	2	1 x 3/4 1 x 1/2 1 x cap	1 x 1 BSP 1 x 1/2 BSP	PI -WP-20-13-13SK-2
	2	1 x 3/4 2 x cap	1 x 1 BSP	PI -WP-20-13SK-13SK-2
	2	1 x 3/4 2 x cap	1 x 1 BSP	PI -WP-20-13SK-13SK-2

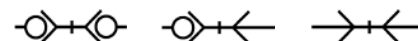
picture	type	max. couplings size [inch]	material	code
	1	2 x 1/2	plastic	PI -PS-13-13
	1	3 x 1/2		PI -PS-13-13-13
	1 i 2	2 x 3/4		PI -PS-20-20
	2	3 x 3/4		PI -PS-20-20-20

### Operating parameters

type	couplings size [inch]	thread connections [inch]	working pressure [bar]	flow rate - Δp = 3 bar [l/min]
1	3/8	3/8 BSP	330	50
1	1/2	3/4 BSP	330	90
1	3/4	1 BSP	330	170
2	1/2	1/2 BSP	450	90
2	3/4	1 BSP	450	250

# HIGH PRESSURE - quick release couplings

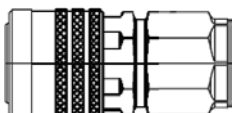
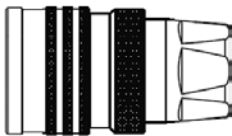
## NORDIC RANGE couplings



### CEJN 525, TEMA STANDARD (3/16" ÷ 2")

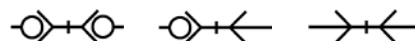
<b>Standard:</b>	Producer's standard
<b>Applications:</b>	Hydraulics (hydraulic oil) Industrial (water, steam, fuels and oils, gases, chemicals),
<b>Working press.:</b>	Up to 450 bar
<b>Material:</b>	Chrome-plated brass (TEMA sockets up to 1") galvanized steel (other items)
<b>Seal:</b>	NBR (from -30°C up to +100°C) Viton (from -15°C up to +200°C)
<b>Advantages:</b>	Double O-ring seal, locking ring

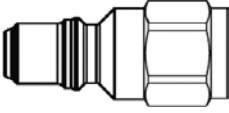
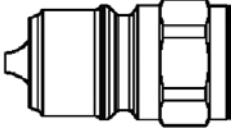
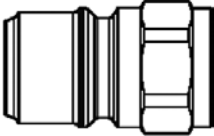

Quick release couplings designed for heavy duty operation. Sockets, except 3/16" size, equipped with an additional O-ring are perfect for gas installations. Both a socket and a plug are available with a static pressure eliminator. The socket, except 3/16" size, has an additional safety locking ring preventing accidental disconnection. They can be used as single shut-off only in 3/16" and 1/4" sizes and only from the socket side. Depending on application, the seal material must be chosen.

picture	size [inch]	description	female thread [inch]	seal	code	
					CEJN	TEMA
 (3/16" and 1/4" size)  	3/16	with valve	1/8 BSP	NBR	-	TA-H-2310
				Viton	-	TA-H-2310V
		without valve		NBR	-	TA-H-2310UV
				Viton	-	TA-H-2310VUV
	1/4	with valve	1/4 BSP	NBR	CJ-H-105251202	TA-H-2510
				Viton	CJ-H-105251212	TA-H-2510V
		without valve		NBR	CJ-H-105250202	TA-H-2510UV
				Viton	-	TA-H-2510VUV
	3/8	with valve	3/8 BSP	NBR	CJ-H-105251204	TA-H-3810
				Viton	CJ-H-105251214	TA-H-3810V
		without valve		NBR	CJ-H-105250204	TA-H-3810UV
				Viton	-	TA-H-3810VUV
		with valve and eliminator		NBR	CJ-H-105251234	TA-H-3811
				Viton	-	TA-H-3811V
	1/2	with valve	1/2 BSP	NBR	CJ-H-105251205	TA-H-5010
				Viton	CJ-H-105251215	TA-H-5010V
		without valve		NBR	CJ-H-105250205	TA-H-5010UV
				Viton	-	TA-H-5010VUV
		with valve and eliminator		NBR	CJ-H-105251235	TA-H-5011
				Viton	-	TA-H-5011V
	3/4	with valve	3/4 BSP	NBR	CJ-H-105251207	TA-H-7510
				Viton	CJ-H-105251217	TA-H-7510V
		without valve		NBR	CJ-H-105250207	TA-H-7510UV
				Viton	-	TA-H-7510VUV
		with valve and eliminator		NBR	CJ-H-105251237	TA-H-7511
				Viton	-	TA-H-7511V
	1	with valve	1 BSP	NBR	CJ-H-105251209	TA-H-10010
				Viton	CJ-H-105251219	TA-H-10010V
		without valve		NBR	CJ-H-105250209	TA-H-10010UV
				Viton	-	TA-H-10010VUV
		with valve and eliminator		NBR	CJ-H-105251239	TA-H-10011
				Viton	-	TA-H-10011V
	1.1/2	with valve	1.1/2 BSP	NBR	-	TA-H-15010
				Viton	-	TA-H-15010V
		without valve		NBR	-	TA-H-15010UV
				Viton	-	TA-H-15010VUV
		with valve and eliminator		NBR	-	TA-H-15011
				Viton	-	TA-H-15011V
	2	with valve	2 BSP	NBR	-	TA-H-20010
				Viton	-	TA-H-20010V
		without valve		NBR	-	TA-H-20010UV
				Viton	-	TA-H-20010VUV

# HIGH PRESSURE - quick release couplings

## NORDIC RANGE couplings



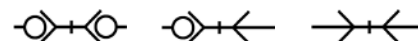
picture	size [inch]	description	female thread [inch]	seal	code	
					CEJN	TEMA
<b>Plug</b>  (3/16" and 1/4" size)   	3/16	with valve	1/8 BSP	NBR	-	TA-H-2320
		without valve		Viton	-	TA-H-2320V
				-	-	TA-H-2320UV
	1/4	with valve	1/4 BSP	NBR	CJ-H-105256202	TA-H-2520
		without valve		Viton	CJ-H-105256212	TA-H-2520V
				-	CJ-H-105255202	TA-H-2520UV
	3/8	with a valve	3/8 BSP	NBR	CJ-H-105256204	TA-H-3820
		without valve		Viton	CJ-H-105256214	TA-H-3820V
		with valve and eliminator		-	CJ-H-105255204	TA-H-3820UV
				NBR	CJ-H-105256234	TA-H-3821
				Viton	-	TA-H-3821V
				-	-	-
	1/2	with valve	1/2 BSP	NBR	CJ-H-105256205	TA-H-5020
		without valve		Viton	CJ-H-105256215	TA-H-5020V
		with valve and eliminator		-	CJ-H-105255205	TA-H-5020UV
				NBR	CJ-H-105256235	TA-H-5021
	3/4	with valve	3/4 BSP	Viton	-	TA-H-5021V
		without valve		NBR	CJ-H-105256207	TA-H-7520
		with valve and eliminator		Viton	CJ-H-105256217	TA-H-7520V
				-	CJ-H-105255207	TA-H-7520UV
	1	with valve	1 BSP	NBR	CJ-H-105256237	TA-H-7521
		without valve		Viton	-	TA-H-7521V
		with valve and eliminator		NBR	CJ-H-105256209	TA-H-10020
				Viton	CJ-H-105256219	TA-H-10020V
	1.1/2	with valve	1.1/2 BSP	-	CJ-H-105255209	TA-H-10020UV
		without valve		NBR	CJ-H-105256239	TA-H-10021
		with valve and eliminator		Viton	-	TA-H-10021V
				NBR	-	TA-H-15020
				Viton	-	TA-H-15020V
				-	-	TA-H-15020UV
	2	with valve	2 BSP	NBR	-	TA-H-15021
		without valve		Viton	-	TA-H-15021V
				NBR	-	TA-H-20020
				Viton	-	TA-H-20020V
				-	-	TA-H-20020UV

## Operating parameters

size [inch]	working pressure (coupling connected / disconnected) [bar]		bursting pressure (coupling connected / disconnected) [bar]		flow rate at $\Delta p = 3$ bar [l/min]	
	CEJN	TEMA	CEJN	TEMA	CEJN	TEMA
3/16	-	200 / 100	-	800 / 400	-	13
1/4	450 / 300	450 / 300	1800 / 1200	1800 / 1200	24	25
3/8	350 / 280	350 / 280	1300 / 1100	1300 / 1120	53	53
1/2	300 / 250	300 / 250	1100 / 1000	1200 / 1000	108	110
3/4	280 / 200	280 / 200	1000 / 800	1120 / 800	214	208
1	250 / 250	250 / 200	930 / 1000	930 / 800	322	295
1.1/2	-	200 / 180	-	800 / 720	-	652
2	-	180 / 150	-	720 / 600	-	1180

# HIGH PRESSURE - quick release couplings

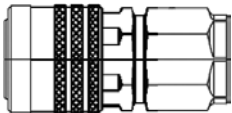
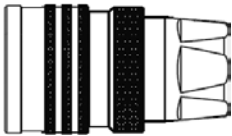
## NORDIC RANGE (SS) couplings

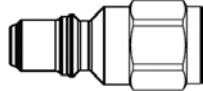
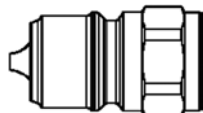



### CEJN 526, TEMA STANDARD (3/16" ÷ 2")

<b>Standard:</b>	Producer's standard
<b>Applications:</b>	Hydraulics (hydraulic oil) Industrial (water, steam, fuels and oils, gases, chemicals)
<b>Working press.:</b>	Up to 300 bar
<b>Material:</b>	Stainless steel (AISI 316)
<b>Seal:</b>	Viton (from -20°C up to +200°C)
<b>Advantages:</b>	Double O-ring seal, locking ring

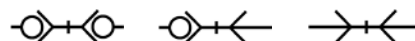
Quick release couplings designed for heavy duty operation. Sockets, except 3/16" size, are equipped with a safety locking ring preventing accidental disconnection and an additional O-ring (perfect for gas installations). Available with a static pressure eliminator. They can be used as single shut-off only in 3/16" and 1/4" sizes and only from the socket side. Depending on application, the seal material must be chosen. For pulsating pressure, the maximum working pressure must be reduced by 50%.

picture	size [inch]	description	female thread [inch]	code	
				CEJN	TEMA
<b>Socket</b>   (3/16" and 1/4" size)  	3/16	with valve	1/8	-	TA-H-2310RFV
		without valve	BSP	-	TA-H-2310RVUV
	1/4	with valve	1/4	CJ-H-105261212	TA-H-2510RV
		without valve	BSP	-	TA-H-2510RVUV
	3/8	with valve	3/8 BSP	CJ-H-105261214	TA-H-3810RV
		without valve		-	TA-H-3810RVUV
		with valve and eliminator	-	-	TA-H-3811RV
	1/2	with valve	1/2 BSP	CJ-H-105261215	TA-H-5010RV
		without valve		-	TA-H-5010RVUV
		with valve and eliminator	-	-	TA-H-5011RV
	3/4	with valve	3/4 BSP	CJ-H-105261217	TA-H-7510RV
		without valve		-	TA-H-7510RVUV
		with valve and eliminator	-	-	TA-H-7511RV
	1	with valve	1 BSP	CJ-H-105261219	TA-H-10010RV
		without valve		-	TA-H-10010RVUV
		with valve and eliminator	-	-	TA-H-10011RV
	1.1/2	with valve	1.1/2	-	TA-H-15010RV
		without valve	BSP	-	TA-H-15010RVUV
	2	with valve	2	-	TA-H-20010RV
		without valve	BSP	-	TA-H-20010RVUV

picture	size [inch]	description	female thread [inch]	code	
				CEJN	TEMA
<b>Plug</b>   (3/16" and 1/4" size)   (from 3/8" up to 1" size)   (1.1/2" and 2" size)	3/16	with valve	1/8	-	TA-H-2320RFV
		without valve	BSP	-	TA-H-2320RUV
	1/4	with valve	1/4	CJ-H-105266212	TA-H-2520RV
		without valve	BSP	-	TA-H-2520RUV
	3/8	with valve	3/8 BSP	CJ-H-105266214	TA-H-3820RV
		without valve		-	TA-H-3820RUV
		with valve and eliminator	-	-	TA-H-3821RV
	1/2	with valve	1/2 BSP	CJ-H-105266215	TA-H-5020RV
		without valve		-	TA-H-5020RUV
		with valve and eliminator	-	-	TA-H-5021RV
	3/4	with valve	3/4 BSP	CJ-H-105266217	TA-H-7520RV
		without valve		-	TA-H-7520RUV
		with valve and eliminator	-	-	TA-H-7521RV
	1	with valve	1 BSP	CJ-H-105266219	TA-H-10020RV
		without valve		-	TA-H-10020RUV
		with valve and eliminator	-	-	TA-H-10021RV
	1.1/2	with valve	1.1/2	-	TA-H-15020RV
		without valve	BSP	-	TA-H-15020RUV
	2	with valve	2	-	TA-H-20020RV
		without valve	BSP	-	TA-H-20020RUV

# HIGH PRESSURE - quick release couplings

## NORDIC RANGE (SS) couplings

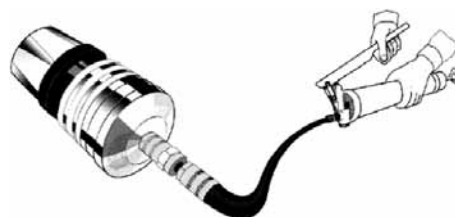
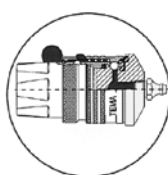


size [inch]	working pressure (coupling connected / disconnected) [bar]		bursting pressure (coupling connected / disconnected) [bar]		flow rate at $\Delta p = 3$ bar [l/min]	
	CEJN	TEMA	CEJN	TEMA	CEJN	TEMA
3/16	-	200 / 100	-	800 / 400	-	13
1/4	250 / 250	250 / 250	1000 / 1000	1000 / 1000	24	25
3/8	300 / 250	300 / 210	1200 / 1000	1200 / 840	53	53
1/2	300 / 250	300 / 250	1200 / 1000	1200 / 1000	108	110
3/4	200 / 200	250 / 200	1000 / 800	1000 / 800	214	208
1	200 / 150	250 / 200	800 / 600	1000 / 800	322	295
1.1/2	-	150 / 150	-	600 / 600	-	652
2	-	120 / 120	-	480 / 480	-	1180

## NORDIC RANGE and NORDIC RANGE SS accessories

Seal kits for sockets	size [inch]	material	code	
			CEJN	TEMA
	3/16	NBR	-	TA-P-11310N
		Viton	-	TA-P-11310V
	1/4	NBR	CJ-H-105254900	TA-H-2500-PSN
		Viton	-	TA-H-2500-PSV
	3/8	NBR	CJ-H-105254901	TA-H-3800-PSN
		Viton	-	TA-H-3800-PSV
	1/2	NBR	CJ-H-105254902	TA-H-5000-PSN
		Viton	-	TA-H-5000-PSV
	3/4	NBR	CJ-H-105254903	TA-H-7500-PSN
		Viton	-	TA-H-7500-PSV
	1	NBR	CJ-H-105254904	TA-H-10000-PSN
		Viton	-	TA-H-10000-PSV
	1.1/2	NBR	-	TA-H-15000-PSN
		Viton	-	TA-H-15000-PSV
	2	NBR	-	TA-H-20000-PSN
		Viton	-	TA-H-20000-PSV

Socket lubricator	size [inch]	code
	3/8	TA-H-GR3
	1/2	TA-H-GR5
	3/4	TA-H-GR7
	1	TA-H-GR10



## Blank plugs/caps

size [inch]	socket blank plug code		plug blank cap code		material		colour	
	CEJN	TEMA	CEJN	TEMA	CEJN	TEMA	CEJN	TEMA
3/16	-	TA-H-2315	-	TA-P-125	PVC	PVC	black	red
1/4	CJ-H-095251001	TA-H-2516	CJ-H-095251051	TA-H-2526				blue
3/8	CJ-H-095251002	TA-H-3816	CJ-H-095251052	TA-H-3826				
1/2	CJ-H-095251003	TA-H-5016	CJ-H-095251053	TA-H-5026				
3/4	CJ-H-095251004	TA-H-7516	CJ-H-095251054	TA-H-7526		POM EBA	black	black
1	CJ-H-095251005	TA-H-10016	CJ-H-095251055	TA-H-10026				
1.1/2	-	TA-H-15015	-	TA-H-15025				
2	-	TA-H-20015	-	TA-H-20025				



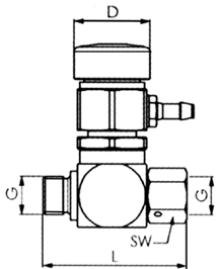
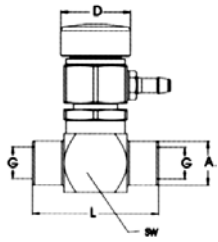
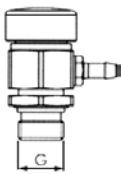
## HIGH PRESSURE - quick release couplings



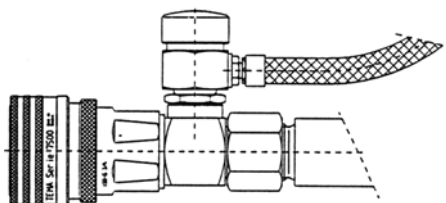
### Release valve TEMA TA

**Material:** Body - zinc-plated steel  
Valve - chrome-plated brass  
**Seal:** NBR  
**Working temp.:** Up to +90°C

Manual valve allows to release the excess of oil in installation back to the tank and to reduce the oil pressure in the installation with a valve. Mounted between the part of the system with quick release couplings and feeding part of the system (under pressure). After releasing the excess of hydraulic oil, connection of quick release couplings becomes possible.

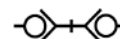
	code	DN [mm]	thread size G [inch]	SW [mm]	L [mm]	D [mm]	working press. [bar]
	TA-V-TA38	10	3/8	21	62	33	250
	TA-V-TA50	13	1/2	25	70	33	250
	TA-V-TA75	20	3/4	32	73	33	250
	TA-V-TA100	25	1	38	77	33	250
	TA-V-TA38-IW	10	3/8	28	60	33	250
	TA-V-TA50-IW	13	1/2	28	66	33	250
	TA-V-515	-	1/2	-	-	33	250
	TA-V-515RV *	-	1/2	-	-	33	250

\* - stainless steel valve with Viton seal.



# HIGH PRESSURE - quick release couplings

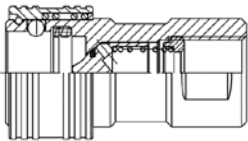
## GROMELLE couplings



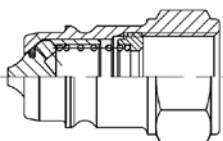
### H-5000 series (1/8" ÷ 2")

<b>Standard:</b>	Producer's standard
<b>Applications:</b>	Hydraulics (hydraulic oil) Industrial (water, steam, fuels and oils, gases, chemicals)
<b>Working press.:</b>	Up to 1000 bar (safety factor 3:1)
<b>Material:</b>	Galvanized steel, brass, AISI 316L steel
<b>Seal:</b>	NBR (from -20°C to +100°C) - standard HA, HL Viton (from -20°C to +200°C) - standard HZ EPDM (from -40°C to +150°C) - option
<b>Advantages:</b>	High working pressure

Quick release couplings designed to withstand high working pressure, pressure impulses, heavy mechanical loads, frequent connection and disconnection. A socket can be optionally equipped with a locking ring to prevent accidental disconnection. The material of the coupling and seal must be selected according to its application. For pulsating pressure, when the quick release coupling is disconnected, the maximum working pressure must be reduced by 50%.

Socket	size [inch]	female thread [inch]	code		
			galv. steel*	brass*	AISI 316L
	1/8	1/8 BSP	GR-HA-0500100	GR-HL-0500100	GR-HZ-05001V0
	1/4	1/4 BSP	GR-HA-0501100	GR-HL-0501100	GR-HZ-05011V0
	3/8	3/8 BSP	GR-HA-0502100	GR-HL-0502100	GR-HZ-05021V0
	1/2	1/2 BSP	GR-HA-0503100	GR-HL-0503100	GR-HZ-05031V0
	3/4	3/4 BSP	GR-HA-0504100	GR-HL-0504100	GR-HZ-05041V0
	1	1 BSP	GR-HA-0505100	GR-HL-0505100	GR-HZ-05051V0
	1.1/4	1.1/4 BSP	GR-HA-05061V0	GR-HL-05061V0	GR-HZ-05061V0
	1.1/2	1.1/2 BSP	GR-HA-05071V0	GR-HL-05071V0	GR-HZ-05071V0
	2	2 BSP	GR-HA-05091V0	GR-HL-05091V0	GR-HZ-05091V0


Socket with locking ring	size [inch]	female thread [inch]	code		
			galv. steel*	brass*	AISI 316L
	1/8	1/8 BSP	GR-HA-0500300	GR-HL-0500300	GR-HZ-05003V0
	1/4	1/4 BSP	GR-HA-0501300	GR-HL-0501300	GR-HZ-05013V0
	3/8	3/8 BSP	GR-HA-0502300	GR-HL-0502300	GR-HZ-05023V0
	1/2	1/2 BSP	GR-HA-0503300	GR-HL-0503300	GR-HZ-05033V0
	3/4	3/4 BSP	GR-HA-0504300	GR-HL-0504300	GR-HZ-05043V0
	1	1 BSP	GR-HA-0505300	GR-HL-0505300	GR-HZ-05053V0
	1.1/4	1.1/4 BSP	GR-HA-05063V0	GR-HL-05063V0	GR-HZ-05063V0
	1.1/2	1.1/2 BSP	GR-HA-05073V0	GR-HL-05073V0	GR-HZ-05073V0
	2	2 BSP	GR-HA-05093V0	GR-HL-05093V0	GR-HZ-05093V0

Plug	size [inch]	female thread [inch]	code		
			galv. steel*	brass*	AISI 316L
	1/8	1/8 BSP	GR-HA-0500200	GR-HL-0500200	GR-HZ-05002V0
	1/4	1/4 BSP	GR-HA-0501200	GR-HL-0501200	GR-HZ-05012V0
	3/8	3/8 BSP	GR-HA-0502200	GR-HL-0502200	GR-HZ-05022V0
	1/2	1/2 BSP	GR-HA-0503200	GR-HL-0503200	GR-HZ-05032V0
	3/4	3/4 BSP	GR-HA-0504200	GR-HL-0504200	GR-HZ-05042V0
	1	1 BSP	GR-HA-0505200	GR-HL-0505200	GR-HZ-05052V0
	1.1/4	1.1/4 BSP	GR-HA-05062V0	GR-HL-05062V0	GR-HZ-05062V0
	1.1/2	1.1/2 BSP	GR-HA-05072V0	GR-HL-05072V0	GR-HZ-05072V0
	2	2 BSP	GR-HA-05092V0	GR-HL-05092V0	GR-HZ-05092V0

\* - Viton seal only for sizes above 1"

# HIGH PRESSURE - quick release couplings

## GROMELLE couplings

Blank caps/plugs 	size [inch]	material	code	
			socket blank plug	plug blank cap
	1/8	aluminium	GR-HD-0510100	GR-HD-0510200
	1/4		GR-HD-0511100	GR-HD-0511200
	3/8		GR-HD-0512100	GR-HD-0512200
	1/2		GR-HD-0513100	GR-HD-0513200
	3/4		GR-HD-0514100	GR-HD-0514200
	1		GR-HD-0515100	GR-HD-0515200
	1.1/4		GR-HD-0516100	GR-HD-0516200
	1.1/2		GR-HD-0517100	GR-HD-0517200
	2		GR-HD-0519100	GR-HD-0519200

### Working parameters

galvanized steel

size [inch]	working pressure [bar] (fluid and gas- group 2)*	working pressure [bar] (fluid and gas- group 1)*	flow rate at $\Delta p = 3$ bar [l/min]	leakage [cm <sup>3</sup> ]
1/8	1000	1000	10.7	0.4
1/4	700	700	21.5	1
3/8	600	600	30	2
1/2	500	500	49	2.5
3/4	400	400	95	5.5
1	300	300	153	9
1.1/4	200	200	239	23
1.1/2	150	38	365	36
2	100	28	653	70

brass

size [inch]	working pressure [bar] (fluid and gas- group 2)*	working pressure [bar] (fluid and gas- group 1)*	flow rate at $\Delta p = 3$ bar [l/min]	leakage [cm <sup>3</sup> ]
1/8	300	300	10.7	0.4
1/4	230	230	21.5	1
3/8	175	175	30	2
1/2	150	150	49	2.5
3/4	125	125	95	5.5
1	100	100	153	9
1.1/4	70	70	239	23
1.1/2	50	50	365	36
2	40	28	653	70

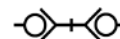
AISI 316L steel

size [inch]	working pressure [bar] (fluid and gas- group 2)*	working pressure [bar] (fluid and gas- group 1)*	flow rate at $\Delta p = 3$ bar [l/min]	leakage [cm <sup>3</sup> ]
1/8	300	300	10.7	0.4
1/4	230	230	21.5	1
3/8	175	175	30	2
1/2	150	150	49	2.5
3/4	125	125	95	5.5
1	100	100	153	9
1.1/4	100	100	239	23
1.1/2	75	38	365	36
2	40	28	653	70

\* - pressure is defined according to Pressure Equipment Directive 97/23 WE (group 1 - hazardous media, group 2 - nonhazardous media).

# HIGH PRESSURE - quick release couplings

## Screw to connect couplings



### DNP PVV3, HQ HS (1/4" ÷ 1.1/4")

<b>Standard:</b>	Producer's standard
<b>Applications:</b>	Hydraulics (hydraulic oil)
<b>Working press.:</b>	Up to 450 bar
<b>Material:</b>	Galvanized steel
<b>Seal:</b>	NBR (from -25°C up to +100°C)
<b>Advantages:</b>	O-ring protecting from unscrewing under pulsating pressure and vibrations

Standard quick release screw to connect couplings equipped with an additional O-ring on the socket body which prevents unscrewing of the coupling exposed to pulsating pressure and vibrations. The coupling can be connected under max. 50 bar (pressure from a socket side or plug side).

Socket	size [inch]	female thread [inch]	M thread [mm]	code	
				DNP PVV3	HQ HS
	1/4	1/4 BSP	M24x2	DP-PVV3-0606112	HQ-HS06-F-04G
	3/8	3/8 BSP	M28x2	DP-PVV3-1010112	HQ-HS10-F-06G
	1/2	1/2 BSP	M36x2	DP-PVV3-1313112	HQ-HS12-F-08G
	3/4	3/4 BSP	M42x2	DP-PVV3-2019112	HQ-HS19-F-12G
	1	1 BSP	M48x3	DP-PVV3-2525112	HQ-HS25-F-16G
	1.1/4	1.1/4 BSP	M70x3	DP-PVV3-3031112	HQ-HS32-F-20G

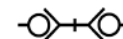
Plug	size [inch]	female thread [inch]	M thread [mm]	code	
				DNP PVV3	HQ HS
	1/4	1/4 BSP	M24x2	DP-PVV3-0606113	HQ-HS06-M-04G
	3/8	3/8 BSP	M28x2	DP-PVV3-1010113	HQ-HS10-M-06G
	1/2	1/2 BSP	M36x2	DP-PVV3-1313113	HQ-HS12-M-08G
	3/4	3/4 BSP	M42x2	DP-PVV3-2019113	HQ-HS19-M-12G
	1	1 BSP	M48x3	DP-PVV3-2525113T	HQ-HS25-M-16G
	1.1/4	1.1/4 BSP	M70x3	DP-PVV3-3031113T	HQ-HS32-M-20G

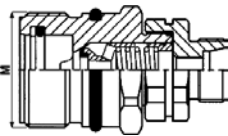
Socket DIN 2353 light series	size [inch]	male thread [mm]	M thread [mm]	code	
				DNP PVV3	HQ HS
	1/4	M14x1.5 (8L)	M24x2	DP-PVV3-0614302	HQ-HS06-F-08L
	3/8	M16x1.5 (10L)	M28x2	DP-PVV3-1016302	HQ-HS10-F-10L
	1/2	M18x1.5 (12L)	M36x2	DP-PVV3-1318302	HQ-HS12-F-12L
		M22x1.5 (15L)		DP-PVV3-1322302	HQ-HS12-F-15L
	3/4	M26x1.5 (18L)	M42x2	DP-PVV3-2026302	HQ-HS19-F-18L
		M30x2 (22L)		DP-PVV3-2030302	HQ-HS19-F-22L
	1	M36x2 (28L)	M48x3	DP-PVV3-2536302	HQ-HS25-F-28L
	1.1/4	M45x2 (35L)	M70x3	-	HQ-HS32-F-35L

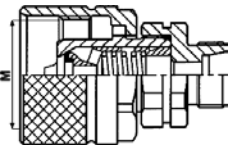
Plug DIN 2353 light series	size [inch]	male thread [mm]	M thread [mm]	code	
				DNP PVV3	HQ HS
	1/4	M14x1.5 (8L)	M24x2	DP-PVV3-0614303	HQ-HS06-M-08L
	3/8	M16x1.5 (10L)	M28x2	DP-PVV3-1016303	HQ-HS10-M-10L
	1/2	M18x1.5 (12L)	M36x2	DP-PVV3-1318303	HQ-HS12-M-12L
		M22x1.5 (15L)		DP-PVV3-1322303	HQ-HS12-M-15L
	3/4	M26x1.5 (18L)	M42x2	DP-PVV3-2026303	HQ-HS19-M-18L
		M30x2 (22L)		DP-PVV3-2030303	HQ-HS19-M-22L
	1	M36x2 (28L)	M48x3	DP-PVV3-2536303T	HQ-HS25-M-28L
	1.1/4	M45x2 (35L)	M70x3	-	HQ-HS32-M-35L

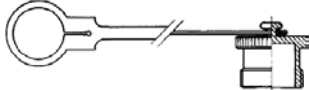
# HIGH PRESSURE - quick release couplings

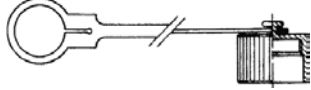
## Screw to connect couplings



Socket DIN 2353 heavy series	size [inch]	male thread [mm]	M thread [mm]	code	
				DNP PVV3	HQ HS
	3/8	M16x1.5 (8S)	M28x2	DP-PVV3-1016402	HQ-HS10-F-08S
		M18x1.5 (10S)		DP-PVV3-1018402	HQ-HS10-F-10S
	1/2	M20x1.5 (12S)	M36x2	DP-PVV3-1320402	HQ-HS12-F-12S
		M22x1.5 (14S)		DP-PVV3-1322402	HQ-HS12-F-14S
	3/4	M24x1.5 (16S)	M42x2	DP-PVV3-2024402	HQ-HS19-F-16S
		M30x2 (20S)		DP-PVV3-2030402	HQ-HS19-F-20S
	1	M30x2 (20S)	M48x3	DP-PVV3-2530402	HQ-HS25-F-20S
		M36x2 (25S)		DP-PVV3-2536402	HQ-HS25-F-25S
		M42x2 (30S)		DP-PVV3-2542402	HQ-HS25-F-30S
	1.1/4	M52x2 (38S)	M70x3	DP-PVV3-3052402	HQ-HS32-F-38S

Plug DIN 2353 heavy series	size [inch]	male thread [mm]	M thread [mm]	code	
				DNP PVV3	HQ HS
	3/8	M16x1.5 (8S)	M28x2	DP-PVV3-1016403	HQ-HS10-M-08S
		M18x1.5 (10S)		DP-PVV3-1018403	HQ-HS10-M-10S
	1/2	M20x1.5 (12S)	M36x2	DP-PVV3-1320403	HQ-HS12-M-12S
		M22x1.5 (14S)		DP-PVV3-1322403	HQ-HS12-M-14S
	3/4	M24x1.5 (16S)	M42x2	DP-PVV3-2024403	HQ-HS19-M-16S
		M30x2 (20S)		DP-PVV3-2030403	HQ-HS19-M-20S
	1	M30x2 (20S)	M48x3	DP-PVV3-2530403T	HQ-HS25-M-20S
		M36x2 (25S)		DP-PVV3-2536403T	HQ-HS25-M-25S
		M42x2 (30S)		DP-PVV3-2542403T	HQ-HS25-M-30S
	1.1/4	M52x2 (38S)	M70x3	DP-PVV3-3052403T	HQ-HS32-M-38S

Socket blank plug	size [inch]	material	code	
			DNP	HQ
	1/4	PP	DP-SPVV-06002	HQ-HS06-F-RED
	3/8		DP-SPVV-10002	HQ-HS10-F-RED
	1/2		DP-SPVV-13002	HQ-HS12-F-RED
	3/4		DP-SPVV-20002	HQ-HS19-F-RED
	1		DP-SPVV-25002	HQ-HS25-F-RED
	1.1/4		DP-SPVV-30002	HQ-HS32-F-RED

Plug blank cap	size [inch]	material	code	
			DNP	HQ
	1/4	PP	DP-SPVV-06003	HQ-HS06-M-RED
	3/8		DP-SPVV-10003	HQ-HS10-M-RED
	1/2		DP-SPVV-13003	HQ-HS12-M-RED
	3/4		DP-SPVV-20003	HQ-HS19-M-RED
	1		DP-SPVV-25003	HQ-HS25-M-RED
	1.1/4		DP-SPVV-30003	HQ-HS32-M-RED

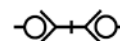
## Operating parameters

size [inch]	working / bursting pressure * [bar]		flow rate at $\Delta p = 3$ bar [l/min]	
	DNP PVV3	HQ HS	DNP PVV3	HQ HS
1/4	450 / 2500	450 / 1800	17	10
3/8	400 / 1800	450 / 1600	56	33
1/2	400 / 1400	400 / 1400	88	83
3/4	300 / 1400	400 / 1500	135	162
1	300 / 1400	300 / 1180	218	343
1.1/4	300 / 1000	300 / 1800	537	470

\* - the value of bursting pressure is given for a connected quick release coupling.

# HIGH PRESSURE - quick release couplings

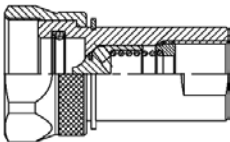
## Screw to connect couplings

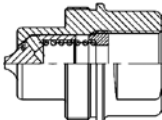



### GROMELLE (1/4" ÷ 2")

<b>Standard:</b>	Producer's standard
<b>Applications:</b>	Hydraulics (hydraulic oil) Industrial (water, steam, fuel and oil gases and chemicals)
<b>Working press.:</b>	Up to 1100 bar
<b>Material:</b>	Galvanized steel, stainless steel
<b>Seal:</b>	NBR (from -20°C up to +100°C) - standard Viton (from -20°C up to +200°C) - standard EPDM (from -40°C up to +150°C) - option
<b>Advantages:</b>	High working pressure

Quick release screw to connect couplings designed to resist heavy mechanical loads. Intended for high working pressure applications (up to 1100 bar). The coupling can be connected under residual pressure. The material of the coupling and seal must be selected according to its application. For pulsating pressure, when the quick release coupling is disconnected, the maximum working pressure must be reduced by 50%.

Socket	size [inch]	female thread [inch]	code	
			galvanized steel (NBR)	AISI 316L (Viton)
	1/4	1/4 BSP	GR-WA-0601700	GR-WV-06017V0
	3/8	3/8 BSP	GR-WA-0602700	GR-WV-06027V0
	1/2	1/2 BSP	GR-WA-0603700	GR-WV-06037V0
	3/4	3/4 BSP	GR-WA-0604700	GR-WV-06047V0
	1	1 BSP	GR-WA-0605700	GR-WV-06057V0
	1.1/4	1.1/4 BSP	GR-WA-0606700	GR-WV-06067V0
	1.1/2	1.1/2 BSP	GR-WA-0607700	GR-WV-06077V0
	2	2 BSP	GR-WA-0609700	GR-WV-06097V0

Plug	size [inch]	female thread [inch]	code	
			galvanized steel (NBR)	AISI 316L (Viton)
	1/4	1/4 BSP	GR-WA-0601400	GR-WV-06014V0
	3/8	3/8 BSP	GR-WA-0602400	GR-WV-06024V0
	1/2	1/2 BSP	GR-WA-0603400	GR-WV-06034V0
	3/4	3/4 BSP	GR-WA-0604400	GR-WV-06044V0
	1	1 BSP	GR-WA-0605400	GR-WV-06054V0
	1.1/4	1.1/4 BSP	GR-WA-0606400	GR-WV-06064V0
	1.1/2	1.1/2 BSP	GR-WA-0607400	GR-WV-06074V0
	2	2 BSP	GR-WA-0609400	GR-WV-06094V0

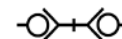
Blank plugs/caps	size [inch]	material	code	
			socket blank plug	plug blank cap
	1/4	aluminium	GR-WD-0611700	GR-WD-0611400
	3/8		GR-WD-0612700	GR-WD-0612400
	1/2		GR-WD-0613700	GR-WD-0613400
	3/4		GR-WD-0614700	GR-WD-0614400
	1		GR-WD-0615700	GR-WD-0615400
	1.1/4		GR-WD-0616700	GR-WD-0616400
	1.1/2		GR-WD-0617700	GR-WD-0617400
	2		GR-WD-0619700	GR-WD-0619400

### Operating parameters

size [inch]	working / bursting pressure [bar]	flow rate at $\Delta p = 3$ bar [l/min]
1/4	1100 / 2400	22
3/8	750 / 2250	29
1/2	750 / 1600	48
3/4	650 / 1600	92
1	450 / 1100	154
1.1/4	450 / 1100	238
1.1/2	300 (38*) / 850	365
2	300 (28*) / 750	653

# HIGH PRESSURE - quick release couplings

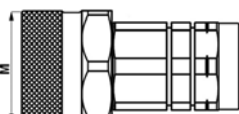
## Screw to connect couplings

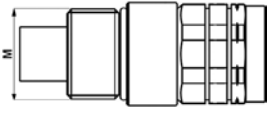


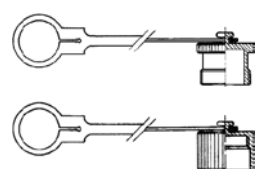
### HQ HFT (3/8" ÷ 1")

<b>Standard:</b>	Producer's standard
<b>Applications:</b>	Hydraulics (hydraulic oil)
<b>Working press.:</b>	Up to 550 bar
<b>Material:</b>	Steel with zinc-nickel coating
<b>Seal:</b>	NBR (from -40°C up to +106°C)
<b>Advantages:</b>	Dry-break, screw to connect couplings

Dry-break, screw to connect couplings. Reliably serve all applications where high pressure impulses occur. An additional O-ring on the coupling body prevents untwisting incidents caused by vibration. The coupling can be connected at residual pressure up to 350 bar. The quick release couplings are plated with zinc-nickel coating which provides several times better corrosion resistance than sole zinc-plating.

Socket 	size [inch]	female thread [inch]	thread M [mm]	code
	3/8	3/8 BSP	M33x2	HQ-HFT10-F-06G
		1/2 BSP		HQ-HFT10-F-08G
	1/2	1/2 BSP	M40x3	HQ-HFT12-F-08G
		3/4 BSP		HQ-HFT12-F-12G
	3/4	1 BSP	M50x3	HQ-HFT19-F-16G
	1	1.1/4 BSP	M58x3	HQ-HFT25-F-20G

Plug 	size [inch]	female thread [inch]	thread M [mm]	code
	3/8	3/8 BSP	M33x2	HQ-HFT10-M-06G
		1/2 BSP		HQ-HFT10-M-08G
	1/2	1/2 BSP	M40x3	HQ-HFT12-M-08G
		3/4 BSP		HQ-HFT12-M-12G
	3/4	1 BSP	M50x3	HQ-HFT19-M-16G
	1	1.1/4 BSP	M58x3	HQ-HFT25-M-20G

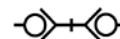
Blank plugs/caps 	size [inch]	material	code	
			socket blank plug	plug blank cap
	3/8	aluminium	HQ-HFT10-F-PLUG	HQ-HFT10-M-CAP
	1/2		HQ-HFT12-F-PLUG	HQ-HFT12-M-CAP
	3/4		HQ-HFT19-F-PLUG	HQ-HFT19-M-CAP
	1		HQ-HFT25-F-PLUG	HQ-HFT25-M-CAP

## Operating parameters

size [inch]	working pressure [bar]	bursting pressure [bar] (connected coupling)	flow rate at Δp = 3 bar [l/min]
3/8	550	1400	51
1/2	550	1400	85
3/4	500	1400	186
1	470	1300	294

## HIGH PRESSURE - quick release couplings

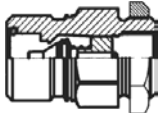
### Screw to connect couplings

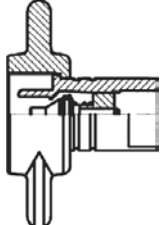



### HQ TC (3/4" ÷ 1")


<b>Standard:</b>	Producer's standard
<b>Applications:</b>	Hydraulics (hydraulic oil)
<b>Working press.:</b>	Up to 650 bar
<b>Material:</b>	Galvanized steel
<b>Seal:</b>	NBR (from -40°C up to +106°C)
<b>Advantages:</b>	Butterfly handles facilitate connection without any special tools

Quick release screw to connect couplings are intended for hydraulic installations of tripper tracks. The socket is equipped with a tightening nut which allows panel mounting. The plug with butterfly handles enables fast and easy connection/disconnection without any special tools. The coupling can be connected under residual pressure (static pressure which remains in the system after drive disconnection).

Socket 	size [inch]	female thread [inch]	code
	3/4	3/4 BSP	HQ-TC19-F-12G
	1	1 BSP	HQ-TC25-F-16G

Plug 	size [inch]	female thread [inch]	code
	3/4	3/4 BSP	HQ-TC19-M-12G
	1	1 BSP	HQ-TC25-M-16G

Socket blank plug 	size [inch]	material	code
	3/4	metal	HQ-TC19-F-PLUG
	1		HQ-TC25-F-PLUG

Plug blank cap 	size [inch]	material	code
	3/4	metal	HQ-TC19-M-CUP
	1		HQ-TC25-M-CUP

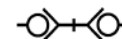
### Operating parameters

size [inch]	working / bursting pressure [bar]	flow rate at $\Delta p = 3$ bar [l/min]
3/4	350 / 1325	124
1	300 / 1325	181



# HIGH PRESSURE - quick release couplings


## NITTO KOHKI couplings





### HSP CUPLA (1/4" ÷ 2")

<b>Standard:</b>	Producer's standard
<b>Applications:</b>	Hydraulics (hydraulic oil) Industrial
<b>Working press.:</b>	Up to 206 bar
<b>Material:</b>	Nickel-plated steel
<b>Seal:</b>	NBR (from -20°C up to +80°C) - standard Viton (from -20°C up to +180°C) - option
<b>Advantages:</b>	Perfect finish, high reliability

Quick release couplings manufactured in Japan of special alloy steel. Highly durable, resistant to vibrations and pulsating pressure. Used in hydraulic installations in foundry equipment where sudden pressure fluctuations occur. Suitable for vacuum pressure. Depending on application, the material of seal must be chosen.

Socket and plug with female thread  	size [inch]	female thread [inch]	socket code	plug code
	1/4	1/4 BSPT	NK-2HS	NK-2HP
	3/8	3/8 BSPT	NK-3HS	NK-3HP
	1/2	1/2 BSPT	NK-4HS	NK-4HP
		3/4 BSPT	NK-6HS	NK-6HP
	3/4		NK-66HS	NK-66HP
	1	1 BSPT	NK-8HS	NK-8HP
	1.1/2	1.1/4 BSPT	NK-10HS	NK-10HP
		1.1/2 BSPT	NK-12HS	NK-12HP
	2	2 BSPT	NK-16HS	NK-16HP

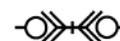
Socket and plug with male thread   BSPT male thread   BSP male thread	size [inch]	male thread [inch]	socket code	plug code
	1/4	1/4 BSPT	NK-2HS-R	NK-2HP-R
		1/4 BSP	NK-2HS-GS	NK-2HP-GS
	3/8	3/8 BSPT	NK-3HS-R	NK-3HP-R
		3/8 BSP	NK-3HS-GS	NK-3HP-GS
	1/2	1/2 BSPT	NK-4HS-R	NK-4HP-R
		1/2 BSP	NK-4HS-GS	NK-4HP-GS
		3/4 BSPT	NK-6HS-R	NK-6HP-R
		3/4 BSP	NK-6HS-GS	NK-6HP-GS

### Operating parameters

size [inch]	working pressure [bar]	flow rate at Δp = 3 bar [l/min]
1/4	206	16
3/8	206	32
1/2	206	65
3/4	206	121
1	206	172
1.1/2	180	456
2	140	924

## HIGH PRESSURE - quick release couplings


### NITTO KOHKI couplings



#### 350 CUPLA (1/4" ÷ 1.1/2")

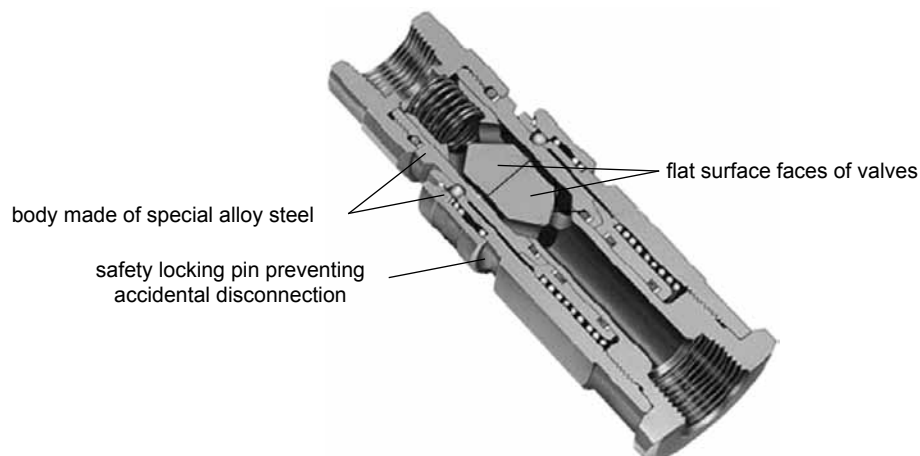
<b>Standard:</b>	Producer's standard
<b>Applications:</b>	Hydraulics (hydraulic oil) Industrial
<b>Working press.:</b>	Up to 345 bar
<b>Material:</b>	Nickel-plated steel
<b>Seal:</b>	Viton (from -20°C up to +180°C)
<b>Advantages:</b>	Dry-break, perfect finish, high reliability

Dry-break, quick release couplings of a "flat-face" type manufactured in Japan of special alloy steel. Highly durable, resistant to vibrations and pulsating pressure. Low air inclusion. Used in hydraulic installations in foundry equipment where sudden pressure fluctuations occur. Equipped with a safety locking pin preventing accidental disconnection. For one hand operation. A distinctive feature of the quick release coupling is the working pressure which does not depend on its size.

<div></div> <div>Socket and plug with female thread</div>	size [inch]	female thread [inch]	coupling code	plug code
	1/4	1/4 BSPT	NK-350-2S	NK-350-2P
		3/8 BSPT	NK-350-3S	NK-350-3P
		3/8 BSP	NK-350-3S-3G	NK-350-3P-3G
	1/2	1/2 BSPT	NK-350-4S	NK-350-4P
		1/2 BSP	NK-350-4S-4G	NK-350-4P-4G
	3/4	3/4 BSPT	NK-350-6S	NK-350-6P
		3/4 BSP	NK-350-6S-6G	NK-350-6P-6G
	1	1 BSPT	NK-350-8S	NK-350-8P
		1 BSP	NK-350-8S-8G	NK-350-8P-8G
1.1/2	1.1/4 BSPT	NK-350-10S	NK-350-10P	
	1.1/2 BSPT	NK-350-12S	NK-350-12P	

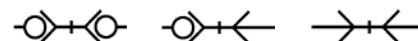
#### Operating parameters

size [inch]	working pressure [bar]	flow rate at $\Delta p = 3$ bar [l/min]
1/4	345	27
1/2	345	56
3/4	345	100
1	345	180
1.1/2	345	360



# HIGH PRESSURE - quick release couplings

## SNAP-TITE couplings



### H series (1/4" ÷ 2")

- Standard:** MIL-C-51234
- Applications:** Hydraulics (hydraulic oil), Industrial (water, steam, fuels and oils, gases and chemicals)
- Working press.:** Up to 759 bar (safety factor 2:1)
- Material:** Brass, galvanized steel, stainless steel, anodized aluminium (option)
- Seal:** NBR (from -35°C up to +120°C)  
Viton (from -25°C up to +205°C)  
EPDM (from -55°C up to +120°C)
- Advantages:** Unique construction of valves allows to obtain laminar flow

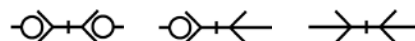
Quick release couplings manufactured in USA. Unique construction of valves allows to obtain laminar flow. Can be used as single shut-off but only from the socket side. The socket is available with a safety locking pin preventing accidental disconnection. Depending on application, the material of quick release coupling and seal must be chosen. On request:

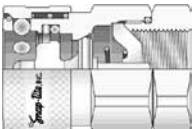
- quick release couplings IH series (socket of zinc-plated steel in sizes from 1/4" to 3/4", a special construction valve guarantees excellent resistance to pulsating pressure in pneumatic installations),
- quick release couplings PH series (socket and plug of zinc-plated steel in sizes from 3/8" to 1", equipped with a static pressure eliminator - can be connected under residual pressure, max. 210 bar),
- quick release couplings with other connection threads (UNF, NPT).

Plug	size [inch]	female thread [inch]	seal	valve	code		
					brass	galvanized steel	AISI 316
	1/4	1/4 BSP	NBR	yes	SN-BVHN4-4RP	SN-VHN4-4RP	SN-SVHN4-4RP
			Viton	yes	SN-BVHN4-4RPV	-	SN-SVHN4-4RPV
		1/8 BSP	-	no	-	-	SN-SPHN4-2RP
		1/4 BSP	-	no	SN-BPHN4-4RP	SN-PHN4-4RP	SN-SPHN4-4RP
	3/8	3/8 BSP	NBR	yes	SN-BVHN6-6RP	SN-VHN6-6RP	SN-SVHN6-6RP
			Viton	yes	SN-BVHN6-6RPV	SN-VHN6-6RPV	SN-SVHN6-6RPV
			-	no	SN-BPHN6-6RP	SN-PHN6-6RP	SN-SPHN6-6RP
			-	no	SN-BPHN6-6RP	SN-PHN6-6RP	SN-SPHN6-6RP
	1/2	1/2 BSP	NBR	yes	SN-BVHN8-8RP	SN-VHN8-8RP	SN-SVHN8-8RP
			Viton	yes	SN-BVHN8-8RPV	SN-VHN8-8RPV	SN-SVHN8-8RPV
			-	no	SN-BPHN8-8RP	SN-PHN8-8RP	SN-SPHN8-8RP
			-	no	SN-BPHN8-8RP	SN-PHN8-8RP	SN-SPHN8-8RP
	3/4	3/4 BSP	NBR	yes	SN-BVHN12-12RP	SN-VHN12-12RP	SN-SVHN12-12RP
			EPDM	yes	-	-	SN-SVHN12-12RPE
			Viton	yes	SN-BVHN12-12RPV	-	SN-SVHN12-12RPV
			-	no	SN-BPHN12-12RP	SN-PHN12-12RP	SN-SPHN12-12RP
	1	1 BSP	NBR	yes	-	SN-VHN16-16RP	SN-SVHN16-16RP
			EPDM	yes	-	-	SN-SVHN16-16RPE
			Viton	yes	SN-BVHN16-16RPV	-	SN-SVHN16-16RPV
			-	no	SN-BPHN16-16RP	SN-PHN16-16RP	SN-SPHN16-16RP
	1.1/4	1.1/4 BSP	NBR	yes	-	SN-VHN20-20RP	SN-SVHN20-20RP
			Viton	yes	SN-BVHN20-20RPV	SN-VHN20-20RPV	SN-SVHN20-20RPV
	1.1/2	1.1/2 BSP	NBR	yes	SN-BVHN24-24RP	SN-VHN24-24RP	SN-SVHN24-24RP
			EPDM	yes	-	-	SN-SVHN24-24RPE
			Viton	yes	SN-BVHN24-24RPV	-	SN-SVHN24-24RPV
			-	no	-	SN-PHN24-24RP	SN-SPHN24-24RP
	2	2 BSP	NBR	yes	SN-BVHN32-32RP	-	-
			Viton	yes	-	-	SN-SVHN32-32RPV
			-	no	-	SN-PHN32-32RP	-


# HIGH PRESSURE - quick release couplings

## SNAP-TITE couplings



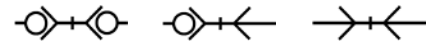
Socket	size [inch]	female thread [inch]	seal	valve	code		
					brass	galvanized steel	AISI 316
	1/4	1/4 BSP	NBR	yes	SN-BVHC4-4RP	SN-VHC4-4RP	SN-SVHC4-4RP
			NBR	yes	-	-	SN-SVHC4-4RPSL*
			Viton	yes	SN-BVHC4-4RPV	-	SN-SVHC4-4RPV
			NBR	no	-	-	SN-SPHC4-4RP
			NBR	no	-	-	SN-SPHC4-4RPSL
			Viton	no	SN-BPHC4-4RPV	-	SN-SPHC4-4RPV
			Viton	no	-	-	SN-SPHC4-4RPVSL*
	3/8	3/8 BSP	NBR	yes	SN-BVHC6-6RP	SN-VHC6-6RP	SN-SVHC6-6RP
			Viton	yes	SN-BVHC6-6RPV	-	SN-SVHC6-6RPV
			NBR	no	SN-BPHC6-6RP	SN-PHC6-6RP	SN-SPHC6-6RP
			NBR	no	-	-	SN-SPHC6-6RPSL*
			Viton	no	SN-BPHC6-6RPV	-	SN-SPHC6-6RPV
	1/2	1/2 BSP	NBR	yes	SN-BVHC8-8RP	SN-VHC8-8RP	SN-SVHC8-8RP
			Viton	yes	SN-BVHC8-8RPV	-	SN-SVHC8-8RPV
			NBR	no	-	SN-PHC8-8RP	SN-SPHC8-8RP
			NBR	no	-	-	SN-SPHC8-8RPSL*
			Viton	no	SN-BPHC8-8RPV	-	SN-SPHC8-8RPV
	3/4	3/4 BSP	NBR	yes	SN-BVHC12-12RP	SN-VHC12-12RP	SN-SVHC12-12RP
			EPDM	yes	-	-	SN-SVHC12-12RPE
			Viton	yes	SN-BVHC12-12RPV	-	SN-SVHC12-12RPV
			NBR	no	SN-BPHC12-12RP	SN-PHC12-12RP	SN-SPHC12-12RP
			Viton	no	SN-BPHC12-12RPV	-	SN-SPHC12-12RPV
	1	1 BSP	NBR	yes	SN-BVHC16-16RP	SN-VHC16-16RP	SN-SVHC16-16RP
			Viton	yes	SN-BVHC16-16RPV	-	SN-SVHC16-16RPV
			Viton	yes	-	-	SN-SVHC16-16RPVSL*
			NBR	no	-	SN-PHC16-16RP	SN-SPHC16-16RP
	1.1/4	1.1/4 BSP	NBR	yes	SN-BVHC20-20RP	SN-VHC20-20RP	-
			Viton	yes	SN-BVHC20-20RPV	-	SN-SVHC20-20RPV
	1.1/2	1.1/2 BSP	NBR	yes	SN-BVHC24-24RP	SN-VHC24-24RP	-
			EPDM	yes	-	-	SN-SVHC24-24RPE
			NBR	yes	-	SN-VHC24-24RPSL*	SN-SVHC24-24RPSL*
			Viton	yes	SN-BVHC24-24RPV	-	SN-SVHC24-24RPV
			Viton	yes	-	-	SN-SVHC24-24RPVSL*
			NBR	no	-	-	SN-SPHC24-24RP
	2	2 BSP	NBR	yes	SN-BVHC32-32RP	-	-
			Viton	yes	-	-	SN-SVHC32-32RPV

\* - socket with a safety locking pin preventing accidental disconnection

Blank plugs/caps	size [inch]	material	code	
			socket blank plug	plug blank cap
	1/4	aluminium	SN-AMPH-4	SN-ADCH-4
	3/8		SN-AMPH-6	SN-ADCH-6
	1/2		SN-AMPH-8	SN-ADCH-8
	3/4		SN-AMPH-12	SN-ADCH-12
	1		SN-AMPH-16	SN-ADCH-16
	1.1/4		SN-AMPH-20	SN-ADCH-20
	1.1/2		SN-AMPH-24	SN-ADCH-24
	2		SN-AMPH-32	SN-ADCH-32

# HIGH PRESSURE - quick release couplings

## SNAP-TITE couplings



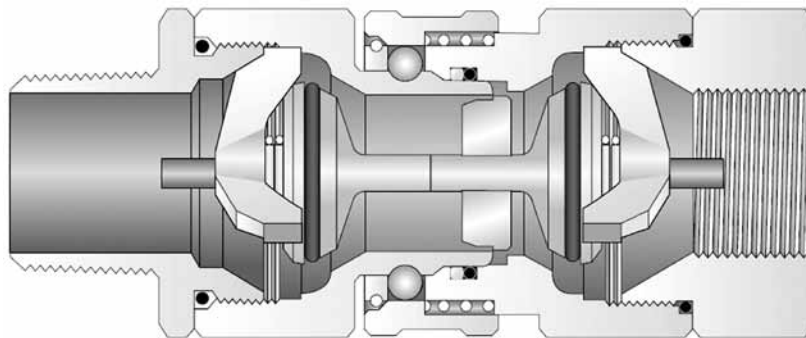
### Operating parameters - working pressure

size [inch]	working pressure [bar]							
	Single, double shut-off				free flow			
	brass	steel	AISI 316	aluminium	brass	galv. steel	AISI 316	aluminium
1/4	155	448	345	155	276	759	690	276
3/8	155	310	276	155	276	759	552	276
1/2	138	276	259	121	276	759	552	276
3/4	138	241	138	121	241	621	483	241
1	121	138	138	103	207	414	276	207
1.1/4	24	121	103	26	69	345	207	69
1.1/2	24	103	103	26	69	345	207	69
2	28	103	34	21	52	276	69	52

### Operating parameters - flow

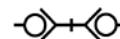
size [inch]	flow rate at $\Delta p = 3 \text{ bar}$ [l/min]	
	double shut-off	single shut-off
1/4	21	22
3/8	28	42
1/2	73	75
3/4	135	151
1	196	227
1.1/4	308	401
1.1/2	420	632
2	1040	1296

### Cross-section of connected quick release coupling



# HIGH PRESSURE - quick release couplings

## SNAP-TITE couplings



### 71 series (1/8" ÷ 2")

- Standard:** Producer's standard
- Applications:** Hydraulics (hydraulic oil)  
Industrial (water, steam, fuels and oils, gases, chemicals)
- Working press.:** Up to 689 bar
- Material:** Galvanized steel, stainless steel
- Seal:** NBR (from -35°C up to +120°C)  
Viton (from -25°C up to +205°C)  
EPDM (from -55°C up to +120°C)
- Advantages:** Dry-break, high working press. of quick release couplings made of special stainless steel

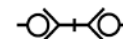
Dry-break quick release couplings manufactured in USA, designed for heavy duty operation. Characterized by the highest working pressure of all "flat-face" type quick release couplings (high pressure stainless steel version). The socket is available with a safety locking pin preventing accidental disconnection. One hand operation. Depending on application, the material of quick release coupling and seal must be chosen. For pulsating pressure, the maximum working pressure must be reduced by 40%. Quick release couplings with other connection threads (UNF) are also available.

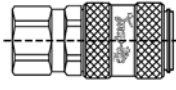
Plug	size [inch]	female thread ** [inch]	seal	code		
				galvanized steel	AISI 316	high pressure stainless steel
 (1/8" size)	1/8	1/4 BSP	NBR	SN-71N2-4RP	-	-
			Viton	SN-71N2-4RPV	-	-
	1/4	1/4 BSP	NBR	SN-71N4-4RP	SN-S71N4-4RP	SN-SH71N4-4RP
			Viton	SN-71N4-4RPV	SN-S71N4-4RPV	SN-SH71N4-4RPV
		1/4 NPTF (1/4 NPSF)	NBR	SN-71N4-4F	SN-S71N4-4F	SN-SH71N4-4F
			EPDM	SN-71N4-4FE	SN-S71N4-4FE	SN-SH71N4-4FE
			Viton	SN-71N4-4FV	SN-S71N4-4FV	SN-SH71N4-4FV
	3/8	1/4 BSP	NBR	SN-71N6-4RP	-	-
			Viton	SN-71N6-6RP	SN-S71N6-6RPV	SN-SH71N6-6RPV
		3/8 BSP	NBR	SN-71N6-6RP	SN-S71N6-6RPV	SN-SH71N6-6RPV
			Viton	-	SN-S71N6-6RPV	SN-SH71N6-6RPV
		1/2 BSP	NBR	SN-71N6-8RP	-	-
			NBR	SN-71N6-6F	SN-S71N6-6F	SN-SH71N6-6F
 (1/4" ÷ 1" size)	1/2	1/2 BSP	NBR	SN-71N8-8RP	SN-S71N8-8RP	SN-SH71N8-8RP
			Viton	-	SN-S71N8-8RPV	SN-SH71N8-8RPV
		1/2 NPTF (1/2 NPSF)	NBR	SN-71N8-8F	SN-S71N8-8F	SN-SH71N8-8F
			EPDM	SN-71N8-8FE	SN-S71N8-8FE	SN-SH71N8-8FE
			Viton	SN-71N8-8FV	SN-S71N8-8FV	SN-SH71N8-8FV
	3/4	3/4 BSP	NBR	SN-71N12-12RP	SN-S71N12-12RP	SN-SH71N12-12RP
			Viton	-	SN-S71N12-12RPV	-
		3/4 NPTF (3/4 NPSF)	NBR	SN-71N12-12F	SN-S71N12-12F	SN-SH71N12-12F
			EPDM	SN-71N12-12FE	SN-S71N12-12FE	-
			Viton	SN-71N12-12FV	SN-S71N12-12FV	SN-SH71N12-12FV
 (2" size)	1	1 BSP	NBR	SN-71N16-16RP	SN-S71N16-16RP	-
			EPDM	-	SN-S71N16-16RPE	-
		1 NPTF (1 NPSF)	NBR	SN-71N16-16F	SN-S71N16-16F	SN-SH71N16-16F
			EPDM	SN-71N16-16FE	SN-S71N16-16FE	SN-SH71N16-16FE
			Viton	SN-71N16-16FV	SN-S71N16-16FV	SN-SH71N16-16FV
	2	1 1/2 BSP	NBR	SN-71N32-24RP	-	-
			NBR	SN-71N32-32RP	-	-
		2 BSP	NBR	SN-71N32-32F	-	-
			EPDM	SN-71N32-32FE	-	-
			Viton	SN-71N32-32FV	-	-

\*\* - threads of stainless steel plugs are given in brackets.

# HIGH PRESSURE - quick release couplings

## SNAP-TITE couplings



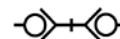
Socket	size [inch]	female thread ** [inch]	seal	code			
				galvanized steel	AISI 316	high pressure stainless steel	
 (1/8" size)	1/8	1/8 NPTF	NBR	SN-71C2-2F	-	-	
			EPDM	SN-71C2-2FE	-	-	
			Viton	SN-71C2-2FV	-	-	
	1/4	1/4 BSP	NBR	SN-71C4-4RP	-	SN-SH71C4-4RP	
			NBR	-	-	SN-SH71C4-4RPSSL*	
			Viton	SN-71C4-4RPV	SN-S71C4-4RPV	-	
		1/4 NPTF (1/4 NPSF)	NBR	SN-71C4-4F	SN-S71C4-4F	SN-SH71C4-4F	
			EPDM	SN-71C4-4FE	SN-S71C4-4FE	-	
			EPDM	-	-	SN-SH71C4-4FESL*	
			NBR	SN-71C4-4FSL*	SN-S71C4-4FSL*	-	
			Viton	SN-71C4-4FV	SN-S71C4-4FV	SN-SH71C4-4FV	
			Viton	SN-71C4-4FVSL*	SN-S71C4-4FVSL*	-	
		3/8	1/4 BSP	NBR	SN-71C6-4RP	-	-
			3/8 BSP	NBR	SN-71C6-6RP	-	SN-SH71C6-6RP
	NBR			SN-71C6-6RPSSL*	-	SN-SH71C6-6RPSSL*	
	Viton			-	SN-S71C6-6RPV	-	
	1/2 BSP		NBR	SN-71C6-8RP	-	-	
	3/8 NPTF (3/8 NPSF)		NBR	SN-71C6-6F	SN-S71C6-6F	SN-SH71C6-6F	
			EPDM	SN-71C6-6FE	SN-S71C6-6FE	-	
			EPDM	SN-71C6-6FESL*	-	-	
			NBR	SN-71C6-6FSL	-	-	
			Viton	SN-71C6-6FV	SN-S71C6-6FV	SN-SH71C6-6FV	
			Viton	SN-71C6-6FVSL*	SN-S71C6-6FVSL*	-	
	1/2	1/2 BSP	NBR	SN-71C8-8RP	SN-S71C8-8RP	SN-SH71C8-8RP	
NBR			SN-71C8-8RPSSL*	-	SN-SH71C8-8RPSSL*		
Viton			-	SN-S71C8-8RPV	SN-SH71C8-8RPV		
1/2 NPTF (1/2 NPSF)		NBR	SN-71C8-8F	SN-S71C8-8F	SN-SH71C8-8F		
		EPDM	SN-71C8-8FE	SN-S71C8-8FE	-		
		EPDM	SN-71C8-8FESL*	SN-S71C8-8FESL*	SN-SH71C8-8FESL*		
		NBR	SN-71C8-8FSL*	SN-S71C8-8FSL*	SN-SH71C8-8FSL*		
		Viton	SN-71C8-8FV	SN-S71C8-8FV	SN-SH71C8-8FV		
		Viton	-	SN-S71C8-8FVSL*	-		
3/4		3/4 BSP	NBR	SN-71C12-12RP	SN-S71C12-12RP	-	
			NBR	SN-71C12-12RPSSL*	-	-	
	Viton		SN-71C12-12RPV	SN-S71C12-12RPV	-		
	Viton		SN-71C12-12RPVSL*	-	-		
	3/4 NPTF (3/4 NPSF)	NBR	SN-71C12-12F	SN-S71C12-12F	SN-SH71C12-12F		
		EPDM	SN-71C12-12FE	SN-S71C12-12FE	-		
		NBR	SN-71C12-12FSL*	SN-S71C12-12FSL*	SN-SH71C12-12FSL*		
		Viton	SN-71C12-12FV	SN-S71C12-12FV	SN-SH71C12-12FV		
		Viton	SN-71C12-12FVSL*	SN-S71C12-12FVSL*	-		
	1	1 BSP	NBR	SN-71C16-16RP	-	-	
			EPDM	-	SN-S71C16-16RPE	-	
NBR			SN-71C16-16RPSSL*	-	-		
Viton			-	SN-S71C16-16RPV	-		
1.1/4 BSP		NBR	SN-71C16-20RP	SN-S71C16-20RP	-		
		NBR	SN-71C16-20RPSSL*	-	-		
1 NPTF (1 NPSF)		NBR	SN-71C16-16F	SN-S71C16-16F	SN-SH71C16-16F		
		EPDM	SN-71C16-16FE	SN-S71C16-16FE	-		
		EPDM	-	SN-S71C16-16FESL*	SN-SH71C16-16FESL*		
		NBR	SN-71C16-16FSL*	SN-S71C16-16FSL*	-		
		Viton	SN-71C16-16FV	SN-S71C16-16FV	-		
2	1.1/2 BSP	NBR	SN-71C32-24RPSSL*	-	-		
		NBR	SN-71C32-32RPSSL*	-	-		
	2 NPT	NBR	SN-71C32-32F	-	-		
		NBR	SN-71C32-32FSL*	-	-		
		Viton	SN-71C32-32FV	-	-		
		Viton	SN-71C32-32FVSL*	-	-		


\* - socket with a safety locking pin preventing accidental disconnection

\*\* - threads of stainless steel sockets are given in brackets

# HIGH PRESSURE - quick release couplings

## SNAP-TITE couplings



Blank plugs/caps 	size [inch]	material	code	
			socket blank plug	plug blank cap
	1/4	plastic	SN-71PCC-4	SN-71PNC-4
	3/8		SN-71PCC-6	SN-71PNC-6
	1/2		SN-71PCC-8	SN-71PNC-8
	3/4		SN-71PCC-12	SN-71PNC-12
	1		SN-71PCC-16	SN-71PNC-16

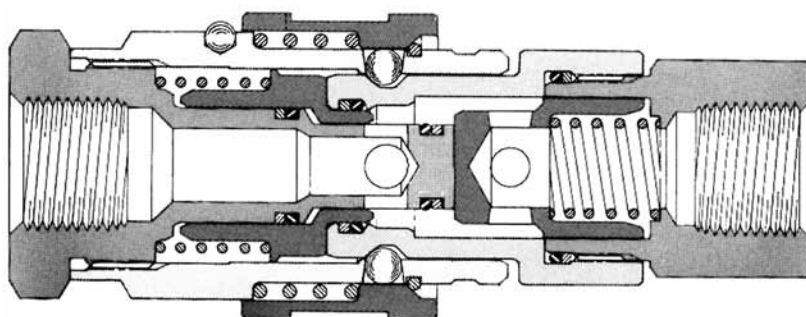
### Operating parameters - working / bursting pressure

size [inch]	working / bursting pressure [bar]		
	galvanized steel	AISI 316	high pressure stainless steel
1/8	689 / 1517	-	-
1/4	689 / 1379	344 / 862	689 / 1379
3/8	689 / 1379	344 / 862	689 / 1379
1/2	689 / 1379	344 / 862	689 / 1379
3/4	517 / 1034	344 / 862	517 / 1034
1	517 / 1034	275 / 689	517 / 1034
2	344 / 689	206 / 413	344 / 689

### Operating parameters - flow, air inclusion, leakage

size [inch]	flow rate at $\Delta p = 3$ bar [l/min]	air inclusion [cm³]	leakage [cm³]
1/8	2.5	0.02	0.12
1/4	21	0.01	0.02
3/8	53	0.02	0.02
1/2	86	0.03	0.03
3/4	169	0.04	0.06
1	247	0.06	0.1
2	957	30.5	5.25

### Cross-section of connected quick release coupling (size from 1/4" to 1")





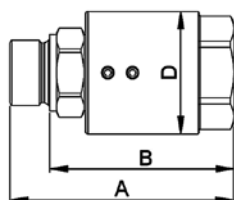
## HIGH PRESSURE - rotary unions



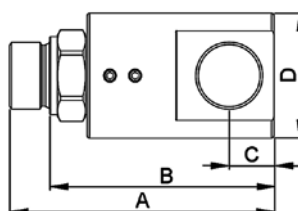
### GGIL, GG90 type

**Material:** Galvanized steel  
**Seal:** NBR  
**Connection:** BSP male / female thread  
**Working temp.:** From -40°C up to +106°C

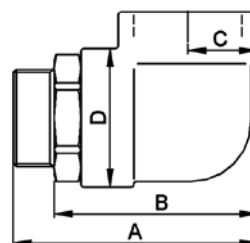
Straight and angular rotary unions. Used in systems that require rotary connection or to eliminate strain of hose assemblies. Characterized by small sizes and low torque. Used in construction, agricultural and industrial machines, lifting equipment and automotive industry.



GGIL type



GG90 (1/4" ÷ 1") type



GG90 (1.1/4" ÷ 2") type

code	thread size [inch]	flow rate [l/min]	max. working pressure [bar]	dimensions			
				A [mm]	B [mm]	C [mm]	D [mm]
straight rotary union GGIL type							
ZO-GGIL-04	1/4	25	400	63	52	-	34
ZO-GGIL-06	3/8	45	400	67	55	-	38
ZO-GGIL-08	1/2	80	360	71	57	-	40
ZO-GGIL-12	3/4	120	310	91	75	-	50
ZO-GGIL-16	1	150	280	100	81	-	55
ZO-GGIL-20	1.1/4	200	250	98	79	-	60
ZO-GGIL-24	1.1/2	250	210	107	85	-	70
ZO-GGIL-32	2	300	180	117	92	-	80
angular rotary union GG90 type							
ZO-GG90-04	1/4	25	400	71	58	11	33
ZO-GG90-06	3/8	45	400	78	66	14	38
ZO-GG90-08	1/2	80	360	92	78	16	40
ZO-GG90-12	3/4	120	310	100	81	19	56
ZO-GG90-16	1	150	280	120	101	23	60
ZO-GG90-20	1.1/4	200	250	120	101	32	65
ZO-GG90-24	1.1/2	250	210	138	115	39	76
ZO-GG90-32	2	300	180	149	124	44	86

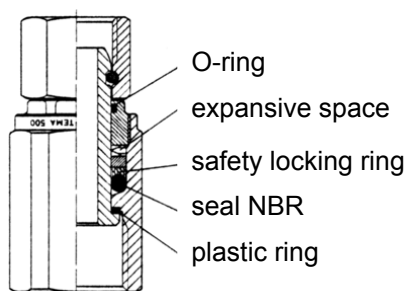
## HIGH PRESSURE - rotary unions



### TEMA SWIVEL

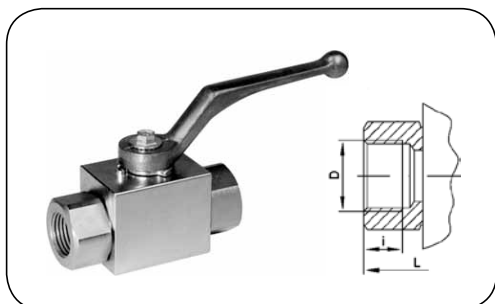
**Body:** Brass  
**Female pin:** Hardened steel  
 (for version RF - stainless steel)  
**Nut:** Galvanized steel  
**Seal:** NBR  
**Working temp.:** From -40°C up to +90°C

Union used in systems that require rotary connection or to eliminate stress of hose assemblies. Characterized by small sizes and low torque. The maximum rotational speed is (60 r.p.m.). Suitable for hydraulic oil or water (RF version).



code	size [inch]	I.D. [mm]	thread (1)		thread (2)		working pressure [bar]
			female	male	female	male	
TA-R-250	1/4	6	1/4	-	3/8	-	250
TA-R-250RF	1/4	6	1/4	-	3/8	-	250
TA-R-500	1/2	11	1/2	-	3/4	-	250
TA-R-500RF	1/2	11	1/2	-	3/4	-	250
TA-R-500B	1/2	11	1/2	-	-	1/2	250
TA-R-500W	1/2	11	-	M18x1.5	-	1/2	250
TA-R-500W5	1/2	11	-	M22x1.5	-	1/2	250
TA-R-500W6	1/2	11	-	M24x1.5	-	1/2	250
TA-R-500-30	1/2	11	-	7/8-14 UNF	-	3/4	250
TA-R-500-31	1/2	11	-	7/8-14 UNF	-	7/8-14 UNF	250
TA-R-500-32	1/2	11	-	7/8-14 UNF	-	1/2	250
TA-R-750	3/4	17	3/4	-	1	-	250
TA-R-750RF	3/4	17	3/4	-	1	-	250
TA-R-1000	1	22	1	-	1.1/4	-	200
TA-R-1000RF	1	22	1	-	1.1/4	-	200

## HIGH PRESSURE - valves

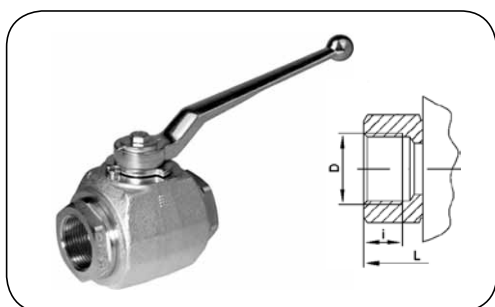


### Ball valve BKH BSP/NPT

<b>Material:</b>	Body	- steel
	Ball	- steel
	Stem	- steel
<b>Seals:</b>	Ball	- PA or PTFE
	Stem	- NBR or FKM
<b>Working temp.:</b>	PA	- (from -40°C up to +100°C)
	PTFE	- (from -200°C up to +250°C)
	NBR	- (from -20°C up to +100°C)
	FKM	- (from -20°C up to +200°C)

2-way ball valve with BSP or NPT female thread designed for high pressure hydraulic or industrial applications. For proper choice of a valve for fluids other than hydraulic oil or for high working temperatures, please contact TUBES INTERNATIONAL® Sales or Technical Department.

code (PA/NBR seal)	code (PTFE/FKM seal)	DN [mm]	thread size D [inch]	work. press. (PA/NBR) [bar]	work. press. (PTFE/FKM) [bar]	valve length L [mm]	weight [kg]
HZ-BKH-G-02	HZ-BKH-G-02-T-V	4	1/8 BSP	500	100	69	0.35
HZ-BKH-G-04	HZ-BKH-G-04-T-V	6	1/4 BSP	500	100	69	0.35
HZ-BKH-G-06	HZ-BKH-G-06-T-V	10	3/8 BSP	500	100	73	0.50
HZ-BKH-G-08	HZ-BKH-G-08-T-V	13	1/2 BSP	500	100	85	0.65
HZ-BKH-G-12	HZ-BKH-G-12-T-V	20	3/4 BSP	400	100	96	1.50
HZ-BKH-G-16	HZ-BKH-G-16-T-V	25	1 BSP	350	100	113	2.00
HZ-BKH-N-02	-	4	1/8 NPT	500	-	69	0.35
HZ-BKH-N-04	-	6	1/4 NPT	500	-	69	0.35
HZ-BKH-N-06	-	10	3/8 NPT	500	-	73	0.50
HZ-BKH-N-08	-	13	1/2 NPT	500	-	92	0.65
HZ-BKH-N-12	-	20	3/4 NPT	400	-	97	1.50
HZ-BKH-N-16	-	25	1 NPT	350	-	113	2.00



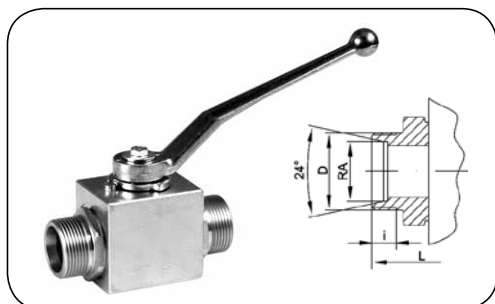
### Ball valve SKH BSP

<b>Material:</b>	Body	- steel
	Ball	- steel
	Stem	- steel
<b>Seals:</b>	Ball	- POM or PTFE
	Stem	- NBR or FKM
<b>Working temp.:</b>	POM	- (from -40°C up to +100°C)
	PTFE	- (from -200°C up to +250°C)
	NBR	- (from -20°C up to +100°C)
	FKM	- (from -20°C up to +200°C)

2-way ball valve with BSP female thread designed for high pressure hydraulic or industrial applications. For proper choice of a valve for fluids other than hydraulic oil or for high working temperatures, please contact TUBES INTERNATIONAL® Sales or Technical Department.

code (POM/NBR seal)	code (PTFE/FKM seal)	DN [mm]	thread size D [inch]	work. press. (POM/NBR) [bar]	work. press. (PTFE/FKM) [bar]	valve length L [mm]	weight [kg]
HZ-SKH-G-20	HZ-SKH-G-20-T-V	32	1.1/4 BSP	400	63	110	3.20
HZ-SKH-G-24	HZ-SKH-G-24-T-V	40	1.1/2 BSP	400	63	120	4.00
HZ-SKH-G-32	HZ-SKH-G-32-T-V	50	2 BSP	400	63	140	5.90

## HIGH PRESSURE - valves

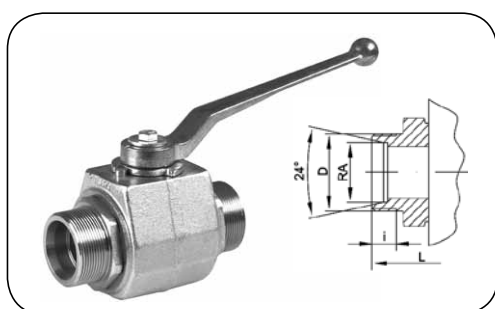


### Ball valve BKH L/S

<b>Material:</b>	Body	- steel
	Ball	- steel
	Stem	- steel
<b>Seals:</b>	Ball	- PA
	Stem	- NBR
<b>Working temp.:</b>	PA	- (from -40°C up to +100°C)
	NBR	- (from -20°C up to +100°C)

2-way ball valve with metric male thread, designed for high pressure hydraulic applications.

code	DN [mm]	thread size D [mm]	pipe diam. RA [mm]	working pressure [bar]	valve length L [mm]	weight [kg]
HZ-BKH-06L	4	M12x1.5	6	500	67	0.30
HZ-BKH-08L	6	M14x1.5	8	500	67	0.30
HZ-BKH-10L	8	M16x1.5	10	500	71	0.30
HZ-BKH-12L	10	M18x1.5	12	500	75	0.50
HZ-BKH-15L	13	M22x1.5	15	500	84	0.60
HZ-BKH-18L	13	M26x1.5	18	500	84	0.60
HZ-BKH-22L	20	M30x2	22	400	102	1.50
HZ-BKH-28L	25	M36x2	28	350	108	2.00
HZ-BKH-08S	4	M16x1.5	8	500	73	0.35
HZ-BKH-10S	6	M18x1.5	10	500	73	0.35
HZ-BKH-12S	8	M20x1.5	12	500	77	0.35
HZ-BKH-14S	10	M22x1.5	14	500	84	0.50
HZ-BKH-16S	13	M24x1.5	16	500	87	0.60
HZ-BKH-20S	13	M30x2	20	500	91	0.65
HZ-BKH-25S	20	M36x2	25	400	110	1.50
HZ-BKH-30S	25	M42x2	30	350	120	2.10



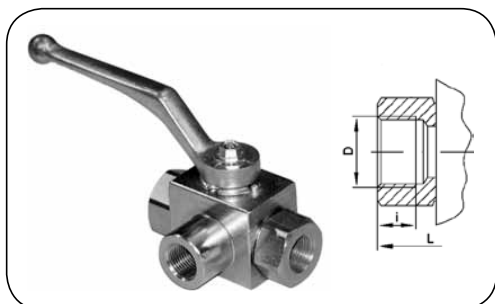
### Ball valve SKH L/S

<b>Material:</b>	Body	- steel
	Ball	- steel
	Stem	- steel
<b>Seals:</b>	Ball	- POM
	Stem	- NBR
<b>Working temp.:</b>	POM	- (from -40°C up to +100°C)
	NBR	- (from -20°C up to +100°C)

2-way ball valve with metric male thread, designed for high pressure hydraulic applications.

code	DN [mm]	thread size D [mm]	pipe diam. RA [mm]	working pressure [bar]	valve length L [mm]	weight [kg]
HZ-SKH-35L	32	M45x2	35	400	128	3.00
HZ-SKH-42L	40	M52x2	42	400	133	3.80
HZ-SKH-38S	32	M52x2	38	400	140	3.10

## HIGH PRESSURE - valves

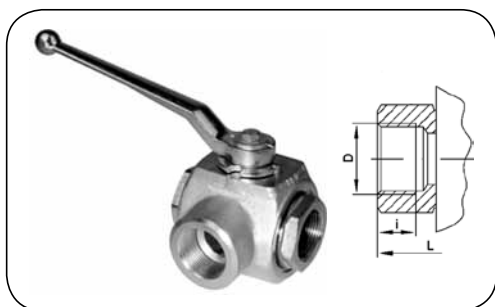


### Ball valve BK3L BSP/NPT

<b>Material:</b>	Body	- steel
	Ball	- steel
	Stem	- steel
<b>Seals:</b>	Ball	- POM
	Stem	- NBR
<b>Working temp.:</b>	POM	- (from -40°C up to +100°C)
	NBR	- (from -20°C up to +100°C)

3-way (L type) ball valve with BSP or NPT female thread, designed for high pressure hydraulic applications.

code	DN [mm]	thread size D [inch]	working pressure [bar]	length L [mm]	weight [kg]
HZ-BK3L-G-02	4	1/8 BSP	400	69	0.40
HZ-BK3L-G-04	6	1/4 BSP	400	69	0.40
HZ-BK3L-G-06	10	3/8 BSP	400	73	0.55
HZ-BK3L-G-08	13	1/2 BSP	350	85	0.70
HZ-BK3L-N-02	4	1/8 NPT	400	69	0.40
HZ-BK3L-N-04	6	1/4 NPT	400	69	0.40
HZ-BK3L-N-06	10	3/8 NPT	400	73	0.55
HZ-BK3L-N-08	13	1/2 NPT	350	92	0.70
HZ-BK3L-N-12	20	3/4 NPT	350	97	1.55
HZ-BK3L-N-16	25	1 NPT	350	113	2.10



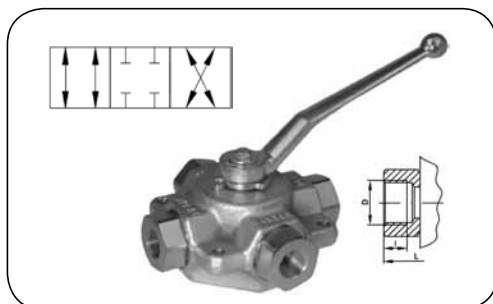
### Ball valve SK3L BSP/NPT

<b>Material:</b>	Body	- steel
	Ball	- steel
	Stem	- steel
<b>Seals:</b>	Ball	- POM
	Stem	- NBR
<b>Working temp.:</b>	POM	- (from -40°C up to +100°C)
	NBR	- (from -20°C up to +100°C)

3-way (L type) ball valve with BSP or NPT female thread, designed for high pressure hydraulic applications.

code	DN [mm]	thread size D [inch]	working pressure [bar]	length L [mm]	weight [kg]
HZ-SK3L-G-12	20	3/4 BSP	350	96	1.55
HZ-SK3L-G-16	25	1 BSP	350	113	2.10
HZ-SK3L-G-20	32	1.1/4 BSP	350	110	3.40
HZ-SK3L-G-24	40	1.1/2 BSP	350	120	4.20
HZ-SK3L-G-32	50	2 BSP	350	140	6.10
HZ-SK3L-N-20	32	1.1/4 NPT	350	115	3.40
HZ-SK3L-N-24	40	1.1/2 NPT	350	135	4.20
HZ-SK3L-N-32	50	2 NPT	350	140	6.20

## HIGH PRESSURE - valves

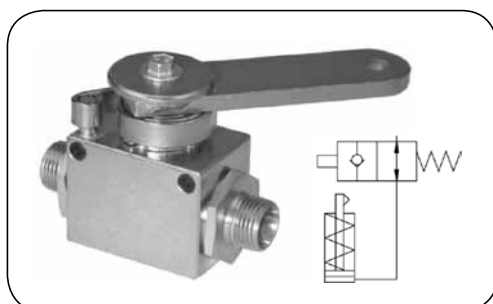


### Ball valve MKHX BSP

<b>Material:</b>	Body	- steel
	Ball	- steel
	Stem	- steel
<b>Seals:</b>	Ball	- POM
	Stem	- NBR
<b>Working temp.:</b>	POM	- (from -40°C up to +100°C)
	NBR	- (from -20°C up to +100°C)

4-way (X Type) ball valve with BSP female thread, designed for high pressure hydraulic applications.

code	DN [mm]	thread size D [inch]	thread length i [mm]	valve length L [mm]	working pressure [bar]	weight [kg]
HZ-MKHX-06-G-02	4	1/8	8	100	500	2.10
HZ-MKHX-06-G-04	6	1/4	12	100	500	2.10
HZ-MKHX-06-G-06	10	3/8	12	115	500	2.90
HZ-MKHX-06-G-08	13	1/2	14	135	400	4.50
HZ-MKHX-06-G-12	20	3/4	16	148	400	7.20
HZ-MKHX-06-G-16	25	1	18	172	350	9.70



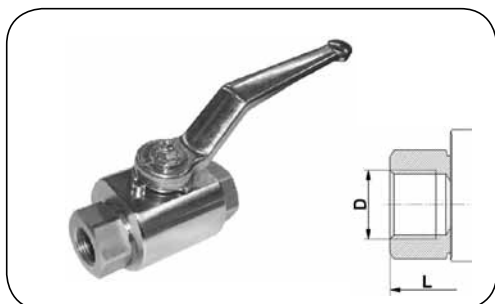
### Ball valve HBKH

<b>Material:</b>	Body	- steel
	Ball	- steel
	Stem	- steel
<b>Seals:</b>	Ball	- POM
	Stem	- NBR
<b>Working temp.:</b>	POM	- (from -40°C up to +100°C)
	NBR	- (from -20°C up to +100°C)

Special 2-way ball valve with male metric thread. Used in hydraulic systems as a stroke limitation on hydraulic actuators.

code	DN [mm]	thread size [mm]	distance between assembly holes [mm]	assembly holes diameter [mm]	working pressure [bar]
HZ-HBKH-12L-B	13	M18x1.5	37.5	6.5	350
HZ-HBKH-15L-B	13	M22x1.5	37.5	6.5	350

## HIGH PRESSURE - valves

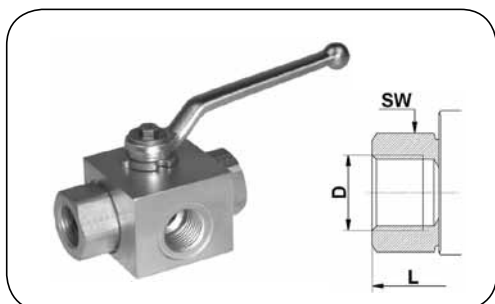


### Ball valve RKH

<b>Material:</b>	Body	- AISI 316Ti
	Ball	- AISI 316Ti
	Stem	- AISI 316Ti
<b>Seal:</b>	Kula	- POM or PTFE
	Stem	- FKM
<b>Working temp.:</b>	POM	(from -40°C up to +100°C)
	PTFE	(from -200°C up to +250°C)
	FKM	(from -20°C up to +200°C)

2-way ball valve with BSP female thread, intended for high pressure hydraulic and industrial installations (chemicals, petrochemical products, solvents and paints, marine installations, water, gases). In order to match the valve to the media other than hydraulic oil or higher working temperatures appropriately, please contact Technical or Sales Department of TUBES INTERNATIONAL®.

code (POM/FKM)	code (PTFE/FKM)	DN [mm]	thread size D [inch]	working press. [bar] (POM/FKM)	working press. [bar] (PTFE/FKM)	length L [mm]	weight [kg]
HZ-RKH-G-02	HZ-RKH-G-02-T-V	4	1/8	400	100	69	0.35
HZ-RKH-G-04	HZ-RKH-G-04-T-V	6	1/4	400	100	69	0.35
HZ-RKH-G-06	HZ-RKH-G-06-T-V	10	3/8	400	100	73	0.50
HZ-RKH-G-08	HZ-RKH-G-08-T-V	13	1/2	400	100	85	0.65
HZ-RKH-G-12	HZ-RKH-G-12-T-V	20	3/4	350	100	96	1.50
HZ-RKH-G-16	HZ-RKH-G-16-T-V	25	1	350	100	113	2.00
HZ-RKH-G-20	HZ-RKH-G-20-T-V	32	1.1/4	400	63	110	3.80
HZ-RKH-G-24	HZ-RKH-G-24-T-V	40	1.1/2	400	63	120	6.10
HZ-RKH-G-32	HZ-RKH-G-32-T-V	50	2	400	63	140	9.10



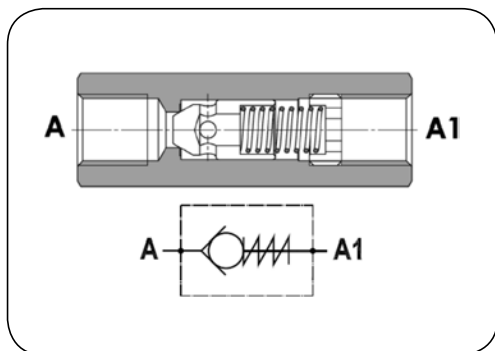
### Ball valve RK3L

<b>Material:</b>	Body	- AISI 316Ti
	Ball	- AISI 316Ti
	Stem	- AISI 316Ti
<b>Seal:</b>	Ball	- POM or PTFE
	Stem	- FKM
<b>Working temp.:</b>	POM	(from -40°C up to +100°C)
	PTFE	(from -200°C up to +250°C)
	FKM	(from -20°C up to +200°C)

3-way ball valve, type L, with BSP female thread, intended for high pressure hydraulic and industrial installations (chemicals, petrochemical products, solvents and paints, marine installations, water, gases). In order to match the valve to the media other than hydraulic oil or higher working temperatures appropriately, please contact Technical or Sales Department of TUBES INTERNATIONAL®.

code (POM/FKM)	code (PTFE/FKM)	DN [mm]	thread size D [inch]	working press. [bar] (POM/FKM)	working press. [bar] (PTFE/FKM)	length L [mm]	spanner [mm]
HZ-RK3L-G-02	HZ-RK3L-G-02-T-V	4	1/8	400	100	69	22
HZ-RK3L-G-04	HZ-RK3L-G-04-T-V	6	1/4	400	100	69	22
HZ-RK3L-G-06	HZ-RK3L-G-06-T-V	10	3/8	400	100	73	27
HZ-RK3L-G-08	HZ-RK3L-G-08-T-V	13	1/2	400	100	85	30
HZ-RK3L-G-12	HZ-RK3L-G-12-T-V	20	3/4	320	100	96	41
HZ-RK3L-G-16	HZ-RK3L-G-16-T-V	25	1	350	100	113	46
HZ-RK3L-G-20	HZ-RK3L-G-20-T-V	32	1.1/4	350	63	110	60
HZ-RK3L-G-24	HZ-RK3L-G-24-T-V	40	1.1/2	250	63	120	70
HZ-RK3L-G-32	HZ-RK3L-G-32-T-V	50	2	250	63	140	85

## HIGH PRESSURE - valves

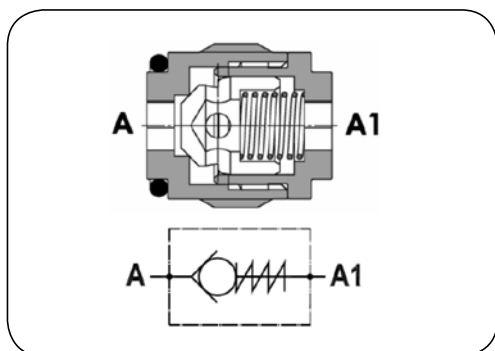


### Check valve FPR

**Material:** Body - galvanized steel  
Stem - hardened steel

Check valves, FPR type, designed for closing hydraulic fluid flow in one direction and opening free hydraulic fluid flow in the opposite direction. Standard opening pressure: 0.5 bar (2.5; 5 and 10 bar available).  
Allowable flow direction: A → A1.

code	thread size [inch]	working pressure [bar]	bursting pressure [bar]	flow rate [l/min]	weight [kg]
DC-FPR-04	1/4	350	1400	12	0.10
DC-FPR-06	3/8	350	1400	30	0.17
DC-FPR-08	1/2	320	1280	45	0.22
DC-FPR-12	3/4	300	1200	85	0.45
DC-FPR-16	1	250	1000	130	0.97
DC-FPR-20	1.1/4	250	1000	200	1.68
DC-FPR-24	1.1/2	210	840	310	2.10



### Check valve FPRI

**Material:** Body - steel  
Stem - hardened steel

**Seal:** NBR

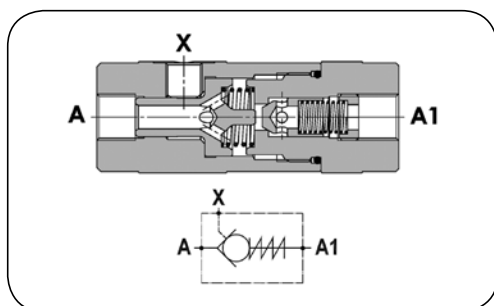
**Working temp.:** From -20°C up to +90°C

Check (cartridge) valve, FPRI type, designed for closing hydraulic fluid flow in one direction and opening free hydraulic fluid flow in the opposite direction. Standard opening pressure: 1 bar.  
Allowable flow direction: A → A1.

code	thread size [inch]	working pressure [bar]	bursting pressure [bar]	flow rate [l/min]	weight [kg]
DC-FPRI-04	1/4	350	1400	15	0.015
DC-FPRI-06	3/8	350	1400	30	0.025
DC-FPRI-08	1/2	350	1400	45	0.040
DC-FPRI-12	3/4	300	1200	80	0.070



## HIGH PRESSURE - valves

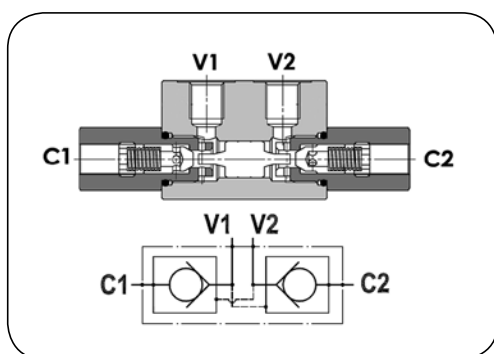


### Controlled check valve FPS

**Material:** Body - galvanized steel  
Stem - hardened steel  
**Seal:** NBR  
**Working temp.:** From -20°C up to +90°C

FPS valve allows free flow of hydraulic fluid in one direction (A → A1) and opening the fluid flow in the opposite direction (A1 → A) but only by X pilot pressure signal. Standard opening pressure (A → A1) 0.5 bar. The pressure required for the X pilot pressure signal to open the flow in the opposite direction (A1 → A) is determined by the product of the multiplication of a pilot ratio and the pressure value on A1 side.

code	thread size [inch]	thread size X [inch]	working pressure [bar]	flow rate [l/min]	pilot ratio	weight [kg]
DC-FPS-04	1/4	1/4	350	12	1:5	0.65
DC-FPS-06	3/8	1/4	310	30	1:4.4	0.82
DC-FPS-08	1/2	1/4	310	45	1:4.2	0.96
DC-FPS-12	3/4	1/4	300	80	1:4	1.95



### Controlled check valve FPD

**Material:** Body - galvanized steel  
Springs - hardened steel  
Stem - hardened steel  
**Seal:** NBR  
**Working temp.:** From -20°C up to +90°C

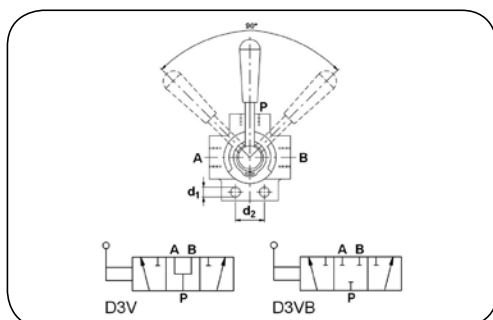
Controlled check valve (hydraulic lock), FPD type, applied in hydraulic systems to prevent automatic drop of an actuator. Standard opening pressure: 2 bar (5 and 10 bar available).

Allowable flow directions: V1 → C1 and simultaneously C2 → V2, V2 → C2 and simultaneously C1 → V1.

code	thread size [inch]	working pressure [bar]	bursting pressure [bar]	flow rate [l/min]	weight [kg]
DC-FPD-04	1/4	300	1200	12	0.65
DC-FPD-06-30L*	3/8	300	1200	30	0.63
DC-FPD-06	3/8	300	1200	30	1.75
DC-FPD-08	1/2	250	1000	45	1.78
DC-FPD-12	3/4	280	1120	85	3.25

## HIGH PRESSURE - valves

### Hydraulic directional control valves

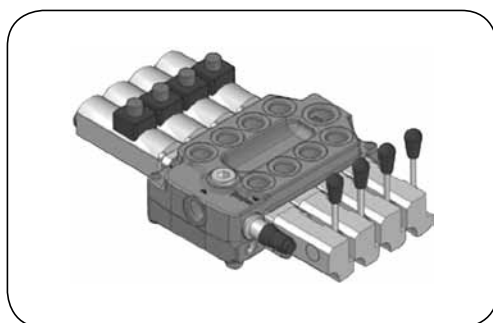


#### Hand switching valve D3V

**Material:** Body - iron casting  
Stem - hardened steel  
**Seal:** NBR  
**Working temp.:** From -20°C up to +90°C

Hand switching 3-way valve used in hydraulic systems to control fluid flow direction. Controlled by manual lever.

code	thread size [inch]	working pressure [bar]	flow rate [l/min]	D1 [mm]	D2 [mm]
DC-D3V-04	1/4	300	30	8.5	24
DC-D3V-06	3/8	250	35	8.5	24
DC-D3V-08	1/2	250	60	10.5	32
DC-D3V-12	3/4	250	100	10.5	32
DC-D3V-16	1	250	180	11	32
DC-D3VB-04	1/4	300	30	8.5	24
DC-D3VB-06	3/8	250	35	8.5	24
DC-D3VB-08	1/2	250	60	10.5	32
DC-D3VB-12	3/4	250	100	10.5	32
DC-D3VB-16	1	250	180	11	32



#### Directional control valves SALAMI

6-way, spool, directional control valves designed for hydraulic installations of cranes, hoists but also other construction, agricultural and industrial machines. They are used to control the fluid flow direction. There are two versions of the valves: sectional or monoblock (cast iron housing). The flow rate depends on a type and ranges from 45 to 180 l/min at maximum working pressure 350 bar. A single directional control valve can have up to 8 working sections.

type	version	nominal flow [l/min]	max. working pressure [bar]	number of working sections
VDM6	monoblock	45	350	7
VDM6A	monoblock	45	350	7
VDM09	monoblock	75	280	6
VDM8	monoblock	75	350	5
VD6A	sectional	45	350	8
VD8A	sectional	75	350	8
VD10A	sectional	120	280	8
VD12A	sectional	180	280	8

# HIGH PRESSURE - valves

## Hydraulic directional control valves



### YFM35, YFM55 type

**Material:** Body - cast iron  
Spools - hardened steel  
**Seal:** NBR  
**Max. working press.:** 315 bar  
**Max. return pressure:** 25 bar  
**Working temp.:** From -20°C up to +80°C

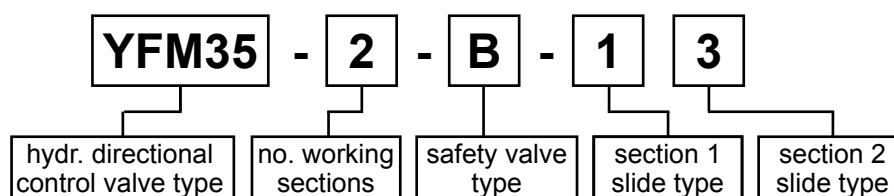
Monoblock spool directional control valve with a manual lever and centring springs. Designed for hydraulic systems used in cranes, hoists, construction, agricultural and industrial machines. Equipped with C type safety valve (set at 140 bar) and type 1 spool as a standard.

code	number of work. sections	safety valve type	nominal flow	connection port size		
				P (pump)	T (tank)	A, B (receiver)
YFM35 type						
TL-YFM35-1-C-1	1	C	45 l/min	3/8" BSP female thread	3/8" BSP female thread	3/8" BSP female thread
TL-YFM35-2-C-11	2					
TL-YFM35-3-C-111	3					
TL-YFM35-4-C-1111	4					
TL-YFM35-5-C-11111	5					
TL-YFM35-6-C-111111	6					
YFM55 type						
TL-YFM55-1-C-1	1	C	60 l/min	1/2" BSP female thread	1/2" BSP female thread	1/2" BSP female thread
TL-YFM55-2-C-11	2					
TL-YFM55-3-C-111	3					
TL-YFM55-4-C-1111	4					
TL-YFM55-5-C-11111	5					
TL-YFM55-6-C-111111	6					

safety valve types			
A type (without a valve)	B type (40 ÷ 80 bar)	C type (63 ÷ 200 bar)	D type (160 ÷ 315 bar)

slide types		
1 type 	2 type 	3 type 

### Code structure



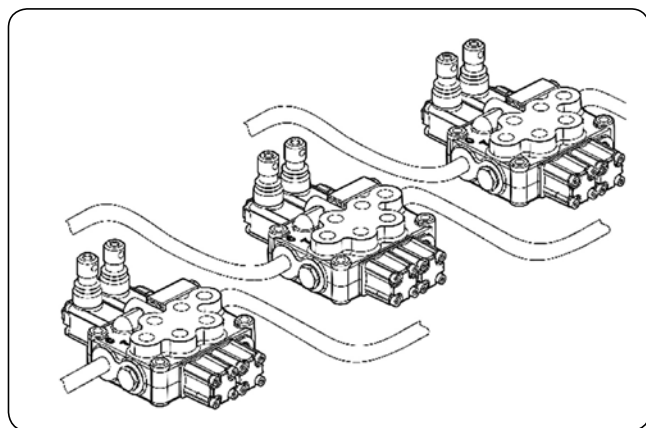
# HIGH PRESSURE - valves

## Hydraulic directional control valves

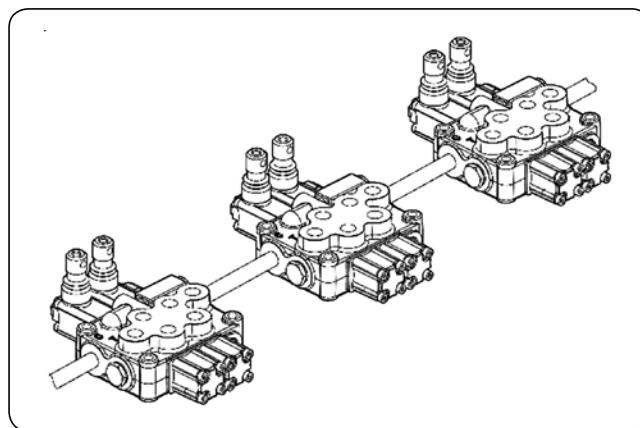
Other solutions - on request

type	description	hydraulic symbol
YFM35 YFM55	detent mechanism 3 positions spool control locked(1, 0, 2)	
YFM35 YFM55	detent mechanism 3 positions spool control locked (2)	
YFM35 YFM55	detent mechanism 3 positions spool control locked (1)	
YFM35 YFM55	pneumatic spool control min. 5.5 bar; max. 10 bar; 1/8" NPT	
YFM35 YFM55	remote control mechanism cable length from 1 to 6 meters	

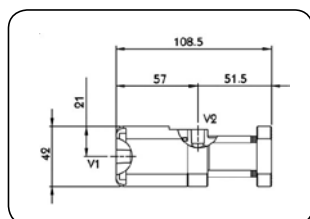
Power beyond - YFM35 and YFM55 directional control valves featuring an adapter. If installed inside the valve housing, the adapter allows to carry over the power beyond the circuit. In other words, the adapter blocks a direct connection between a pressure channel (P) and a tank channel (T). So as a result, unused hydraulic fluid under pressure gets directed to other parts of hydraulic system in order to supply other elements.



regular operation mode



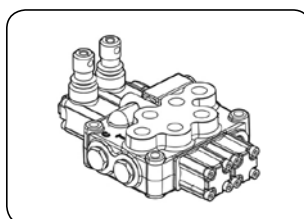
operation with power beyond function



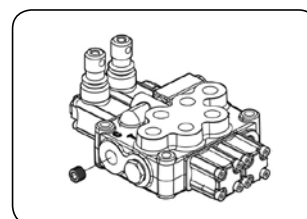
pneumatic control



remote control



regular operation mode



operation with power beyond function

# HIGH PRESSURE - valves

## Hydraulic directional control valves



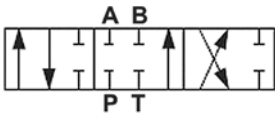
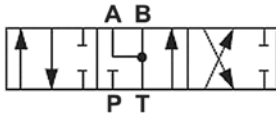
### YE45 type

**Material:** Body - iron cast  
Spools - hardened steel  
**Seal:** NBR  
**Max. working press.:** 250 bar  
**Max. return pressure:** 25 bar  
**Control voltage:** 12 V DC  
**Working temp.:** From -20°C up to +80°C

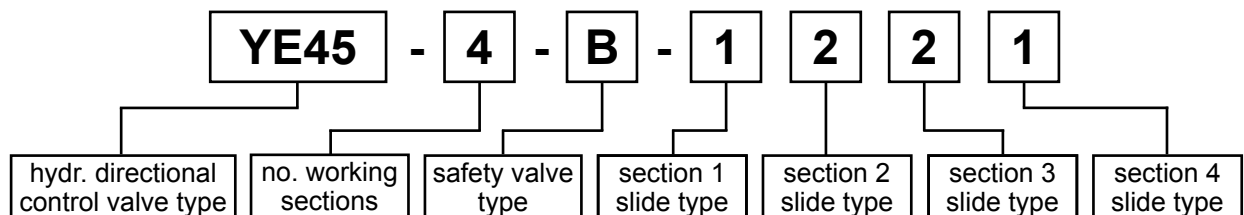
Monoblock spool directional control valve with electrically controlled centring springs. Designed for hydraulic systems used in cranes, hoists, construction, agricultural and industrial machines. Equipped with C type safety valve (set at 140 bar) and type 1 spools.

code	number of work. sections	safety valve type	nominal flow	connection port size		
				P (pump)	T (tank)	A, B (receiver)
TL-YE45-1-C-1	1	C	45 l/min	3/8" BSP female thread	3/8" BSP female thread	3/8" BSP female thread
TL-YE45-2-C-11	2					
TL-YE45-3-C-111	3					
TL-YE45-4-C-1111	4					
TL-YE45-5-C-11111	5					
TL-YE45-6-C-111111	6					

safety valve types			
A type (without valve)	B type (40 ÷ 80 bar)	C type (63 ÷ 200 bar)	D type (160 ÷ 315 bar)

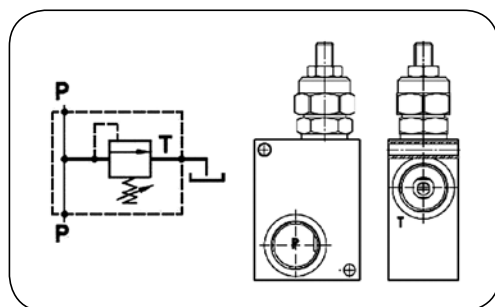
slide types	
1 type 	2 type 

### code structure



## HIGH PRESSURE - valves

### Hydraulic safety valves



#### Pressure relief valve FPM

**Material:** Body - aluminium  
Stem - zinc-plated steel  
**Seal:** NBR  
**Working temp.:** From -20°C up to +90°C

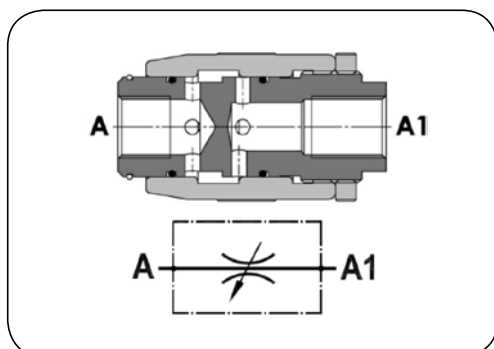
FPM safety valve limits the maximum pressure in a hydraulic system. The valve enables hydraulic fluid to flow freely between P connection ports. When the pressure rises above the set value, T passage opens and the excessive pressurised fluid is relieved out of the system, into the tank. The maximum pressure value is set with an adjusting screw (set with a hex wrench, locked with a locking nut).

code	thread size [inch]	flow rate [l/min]	set pressure range [bar]	set pressure adjustment [bar/turn]	weight [kg]
DC-FPM-40P05-06	3/8	40	5 ÷ 50	10	0.41
DC-FPM-40P10-06	3/8	40	30 ÷ 100	20	0.41
DC-FPM-40P20-06	3/8	40	50 ÷ 220	40	0.41
DC-FPM-40P05-08	1/2	40	5 ÷ 50	10	0.41
DC-FPM-40P10-08	1/2	40	30 ÷ 100	20	0.41
DC-FPM-40P20-08	1/2	40	50 ÷ 220	40	0.41
DC-FPM-70P05-08	1/2	80	5 ÷ 50	10	0.73
DC-FPM-70P10-08	1/2	80	30 ÷ 100	20	0.73
DC-FPM-70P20-08	1/2	80	80 - 280*	40	0.73
DC-FPM-70P05-12	3/4	80	5 ÷ 50	10	0.73
DC-FPM-70P10-12	3/4	80	30 ÷ 100	20	0.73
DC-FPM-70P20-12	3/4	80	80 ÷ 280*	40	0.73

\* - be very careful not to set the pressure value higher than 250 bar (max. working pressure of the valve body).

## HIGH PRESSURE - valves

### Throttle and safety valves



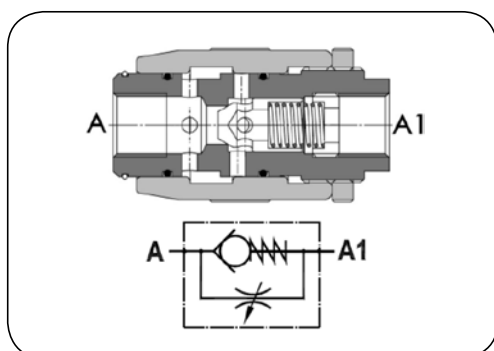
#### Throttle valve FPMB

**Material:** Body - galvanized steel  
**Seal:** NBR  
**Working temp.:** From -20°C up to +90°C

Adjustable throttle valve, FPMB type, used in hydraulic systems to control a flow rate. The flow rate is controlled by a rotary ring.

Allowable flow direction: A → A1, A1 → A.

code	thread size [inch]	working pressure [bar]	bursting pressure [bar]	flow rate [l/min]	weight [kg]
DC-FPMB-04	1/4	350	1400	12	0.28
DC-FPMB-06	3/8	350	1400	30	0.43
DC-FPMB-08	1/2	310	1240	45	0.63
DC-FPMB-12	3/4	280	1120	85	1.05
DC-FPMB-16	1	250	1000	150	1.96



#### Throttle check valve FPMU

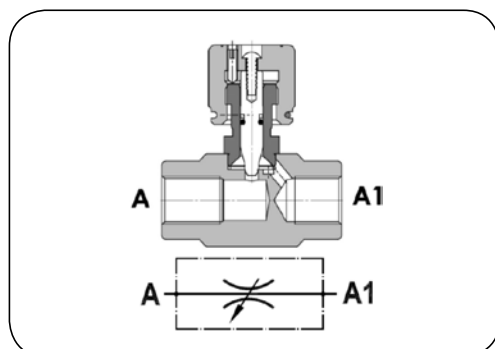
**Material:** Body - galvanized steel  
 Stem - hardened steel  
**Seal:** NBR  
**Working temp.:** From -20°C up to +90°C

Throttle check valves, FPMU type, used in hydraulic systems to open a free flow in one direction. The flow, throttled in the opposite direction, is controlled by a rotary ring. Standard opening pressure: 0.5 bar (2.5; 5 and 10 bar available). Allowable flow direction: A → A1 (free), A1 → A (throttled).

code	thread size [inch]	working pressure [bar]	bursting pressure [bar]	flow rate [l/min]	weight [kg]
DC-FPMU-04	1/4	350	1400	12	0.28
DC-FPMU-06	3/8	350	1400	30	0.43
DC-FPMU-08	1/2	310	1240	45	0.63
DC-FPMU-12	3/4	280	1120	85	1.05
DC-FPMU-16	1	250	1000	150	1.96

## HIGH PRESSURE - valves

### Throttle and safety valves



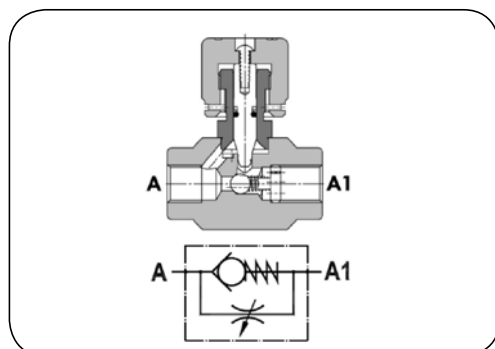
#### Throttle valve FPSB

**Material:** Body - galvanized steel  
Knob - steel  
**Seal:** NBR  
**Working temp.:** From -20°C up to +90°C

Adjustable throttle valve, FPSB type, used in hydraulic systems to control a flow rate. The flow rate is controlled by a handwheel.

Allowable flow direction: A → A1, A1 → A.

code	thread size [inch]	working pressure [bar]	bursting pressure [bar]	flow rate [l/min]	weight [kg]
DC-FPSB-04	1/4	300	1200	12	0.30
DC-FPSB-06	3/8	300	1200	30	0.31
DC-FPSB-08	1/2	280	1120	45	0.31



#### Throttle check valve FPSU

**Material:** Body - galvanized steel  
Spring - steel  
Ball - steel  
Knob - steel  
**Seal:** NBR  
**Working temp.:** From -20°C up to +90°C

Throttle check valve, FPSU type, used in hydraulic systems to open free flow in one direction. The flow, throttled in the opposite direction, is controlled by a rotary ring. Standard opening pressure: 0.5 bar.

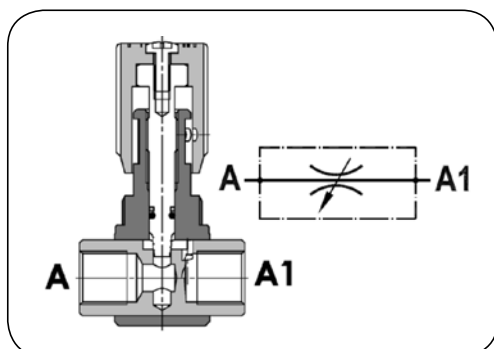
Allowable flow direction: A → A1 (free), A1 → A (throttled).

code	thread size [inch]	working pressure [bar]	bursting pressure [bar]	flow rate [l/min]	weight [kg]
DC-FPSU-04	1/4	300	1200	12	0.31
DC-FPSU-06	3/8	300	1200	25	0.31
DC-FPSU-08	1/2	280	1120	40	0.31



## HIGH PRESSURE - valves

### Throttle and safety valves



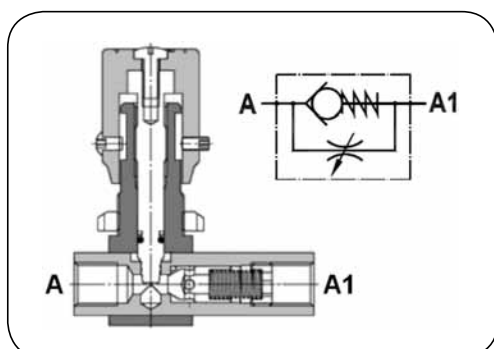
#### Throttle valve FPB

**Material:** Body - galvanized steel  
Wheel - plastic  
**Seal:** NBR  
**Working temp.:** From -20°C up to +90°C

Adjustable throttle valve, FPB type, used in hydraulic systems to control a flow rate. The flow rate is controlled by a wheel.

Allowable flow direction: A → A1, A1 → A.

code	thread size [inch]	working pressure [bar]	bursting pressure [bar]	flow rate [l/min]	weight [kg]
DC-FPB-04	1/4	300	1200	12	0.21
DC-FPB-06	3/8	300	1200	30	0.35
DC-FPB-08	1/2	280	1120	45	0.50
DC-FPB-12	3/4	250	1000	85	0.87



#### Throttle check valve FPU

**Material:** Body - galvanized steel  
Spring - steel  
Stem - steel  
Knob - plastic  
**Seal:** NBR  
**Working temp.:** From -20°C up to +90°C

Throttle check valve, FPSU type, used in hydraulic systems to open free flow in one direction. The flow, throttled in the opposite direction, is controlled by a rotary ring. Standard opening pressure: 0.5 bar (2.5, 5 and 10 bar available).

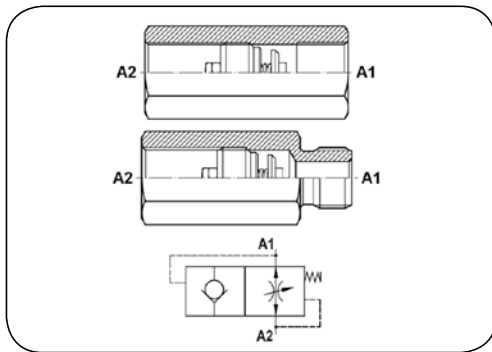
Allowable flow direction: A → A1 (free), A1 → A (throttled).

code	thread size [inch]	working pressure [bar]	bursting pressure [bar]	flow rate [l/min]	weight [kg]
DC-FPU-04	1/4	300	1200	12	0.25
DC-FPU-06	3/8	300	1200	30	0.42
DC-FPU-08	1/2	280	1120	45	0.60
DC-FPU-12	3/4	250	1000	85	1.10

picture	code	valve size [inch]	thread size [mm]	description
	DC-TP-04	1/4	M21x1	Tightening nut designed for mounting valves of FPB or FPU type. Material: galvanized steel.
	DC-TP-06	3/8	M25x1.5	
	DC-TP-08	1/2	M30x1.5	
	DC-TP-12	3/4	M35x1.5	

## HIGH PRESSURE - valves

### Throttle and safety valves



#### Safety valve FFP, MFP

**Material:** Galvanized steel

Safety valve secures hydraulic system from oil leakage in case of sudden depressurisation (e.g. failure of hose assembly).

Allowable flow direction: A1 → A2 (valve), A2 → A1 (without valve).

code	thread size [inch]	working pressure [bar]	bursting pressure [bar]	flow rate [l/min]	weight [kg]
FFP type (BSP female thread)					
DC-FFP-04	1/4	350	1400	25	0.08
DC-FFP-06	3/8	350	1400	50	0.11
DC-FFP-08	1/2	350	1400	80	0.18
DC-FFP-12	3/4	350	1400	150	0.40
DC-FFP-16	1	300	1200	200	0.88
MFP type (BSP male thread)					
DC-MFP-04	1/4	350	1400	25	0.08
DC-MFP-06	3/8	350	1400	50	0.12
DC-MFP-08	1/2	350	1400	80	0.21
DC-MFP-12	3/4	350	1400	150	0.41
DC-MFP-16	1	300	1200	200	0.86

# HIGH PRESSURE - valves

## Block valves and adapters



### Control valves NG6, NG10 type

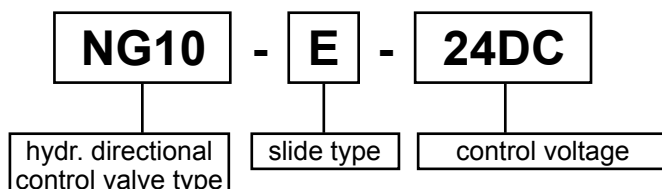
<b>Material:</b>	Body - steel
	Spool - hardened steel
<b>Seal:</b>	NBR
<b>Max. working press.:</b>	315 bar
<b>Control voltage:</b>	24 V DC
<b>Working temp.:</b>	From -20°C up to +80°C

Monoblock spool directional control valve, electrically controlled, with centring springs designed for panel mounting. Used in hydraulic systems of industrial machines. Supplied with O-rings and mounting screws as a standard. Plugs are equipped with LEDs indicating status of power supply.

code	nominal flow	slide type	main view
NG6 type			
TL-NG6-E-24DC	60 l/min	E	
TL-NG6-G-24DC		G	
TL-NG6-H-24DC		H	
TL-NG6-J-24DC		J	
TL-NG6-HA-24DC		HA	
TL-NG6-A-24DC		A	
TL-NG6-D-24DC		D	
TL-NG6-HB-24DC		HB	
NG10 type			
TL-NG10-E-24DC	120 l/min	E	
TL-NG10-G-24DC		G	
TL-NG10-H-24DC		H	
TL-NG10-J-24DC		J	
TL-NG10-HA-24DC		HA	
TL-NG10-A-24DC		A	
TL-NG10-D-24DC		D	
TL-NG10-HB-24DC		HB	

slide types		
E type 	G type 	H type 
J type 	HA type 	A type 
D type 	HB type 	

### Code structure



## HIGH PRESSURE - valves

### Block valves and adapters



**Material:** Steel  
**Seal:** NBR  
**Max: working press.:** 315 bar  
**Ambient temp.:** From -20°C up to +50°C  
**Medium temp.:** From -20°C up to +70°C

### Check valve AKV

code	type	flow rate [l/min]	working pressure [bar]	hydraulic symbol
TL-ZAKV-6-D	NG6	40	315	
TL-ZAKV-10-D	NG10	100	315	
TL-ZAKV-6-P	NG6	40	315	
TL-ZAKV-10-P	NG10	100	315	
TL-ZAKV-6-A	NG6	40	315	
TL-ZAKV-10-A-	NG10	100	315	

### Controlled check valve APKV

code	type	flow rate [l/min]	working pressure [bar]	hydraulic symbol
TL-ZAPKV-6-D	NG6	60	315	
TL-ZAPKV-10-D	NG10	80	315	
TL-ZAPKV-6-A	NG6	60	315	
TL-ZAPKV-10-A	NG10	80	315	
TL-ZAPKV-6-B	NG6	60	315	
TL-ZAPKV-10-B	NG10	80	315	

## HIGH PRESSURE - valves

### Block valves and adapters

#### Safety valve LPKV

code	type	flow rate [l/min]	set pressure range [bar]	hydraulic symbol
TL-ZLPKV-6-D-100	NG6	60	0 ÷ 100	
TL-ZLPKV-6-D-315	NG6	60	0 ÷ 315	
TL-ZLPKV-10-D-100	NG10	100	0 ÷ 100	
TL-ZLPKV-10-D-315	NG10	100	0 ÷ 315	
TL-ZLPKV-6-P-100	NG6	60	0 ÷ 100	
TL-ZLPKV-6-P-315	NG6	60	0 ÷ 315	
TL-ZLPKV-10-P-100	NG10	100	0 ÷ 100	
TL-ZLPKV-10-P-315	NG10	100	0 ÷ 315	
TL-ZLPKV-6-A-100	NG6	60	0 ÷ 100	
TL-ZLPKV-6-A-315	NG6	60	0 ÷ 315	
TL-ZLPKV-10-A-100	NG10	100	0 ÷ 100	
TL-ZLPKV-10-A-315	NG10	100	0 ÷ 315	

#### Throttle check valve RCKV

code	type	flow rate [l/min]	working pressure [bar]	hydraulic symbol
TL-ZRCKV-6-D	NG6	80	315	
TL-ZRCKV-10-D	NG10	160	315	




## HIGH PRESSURE - valves


### Block valves and adapters

Panel mounting plates PNG6 and PNG10 allows to connect valves designed for plate mounting with high pressure hose assemblies.


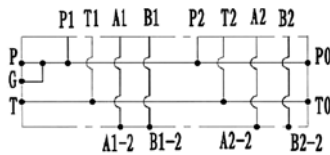
Material: Steel.

Max. working press.: 350 bar.

picture	code	type	connection port size	description
	TL-PNG6-D38	NG6	3/8" BSP female	For connection of directional valve NG6 type with hose assemblies. Connection ports located on the bottom part of the plate.
	TL-PNG6-B38	NG6	3/8" BSP female	For connection of directional valve NG6 type with hose assemblies. Connection ports located on the side parts of the plate.
	TL-PNG10-D12	NG10	1/2" BSP female	For connection of directional valve NG10 type with hose assemblies. Connection ports located on the bottom part of the plate.

picture	code	1 type	2 type	description
	TL-PNG10-6	NG10	NG6	Adapter PNG10 / PNG6

A block intended to connect NG6 type valves with hose assemblies. Connection ports at the sides of the block. Additional G connection port for a pressure gauge. Connection port sizes: 1/2" BSP female thread (P and T), 3/8" BSP female thread (A and B). Max. working pressure: 315 bar.

picture*	code	type	ino. of valves	hydraulic diagram**
	TL-PNG6-PF2PL	NG6	2	
	TL-PNG6-PF3PL		3	
	TL-PNG6-PF4PL		4	
	TL-PNG6-PF5PL		5	
	TL-PNG6-PF6PL		6	
	TL-PNG6-PF7PL		7	
	TL-PNG6-PF8PL		8	

\* - picture of a block with TL-PNG6-PF3PL code

\*\* - hydraulic diagram of a block with TL-PNG6-PF2PL code

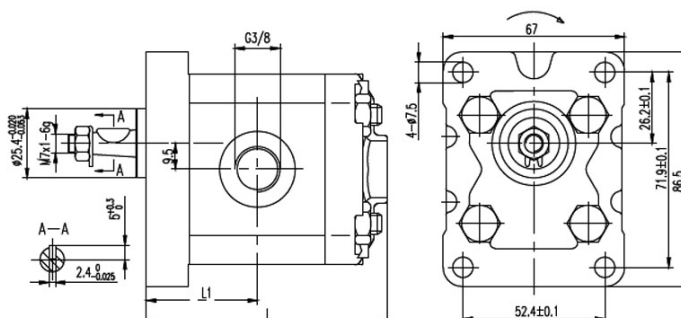
# HIGH PRESSURE - pumps

## Gear pumps TRALE

Positive displacement, external gear pumps intended for hydraulic systems of machines and devices.

Material	
Housing	Aluminium
Mounting plate	Aluminium (groups 1 and 2), cast iron (group 3)
Rear cover	Aluminium (groups 1 and 2), cast iron (group 3)
Sealing	NBR
Operation conditions	
Medium	Hydraulic oil of L-HM46 type or substitute
Fluid viscosity	From 10 cSt up to 600 cSt (recommended 30 ÷ 45)
Working temperature	From -20°C up to +90°C (medium), from -20°C up to +60°C (ambient)
Symbols	
CC	Displacement
P1	Maximum working pressure (continuous operation)
P3	Maximum peak pressure (intermittent operation)
V	Maximum rotary speed

Group 1 - conical 1:8, European cover (Ø 25.4 mm), threaded connection

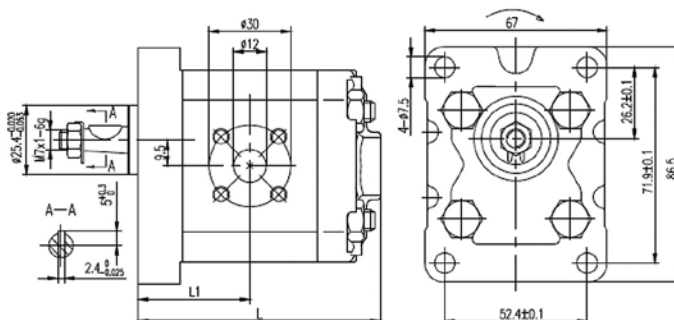


code		CC [cm³/rev.]	inlet [BSP]	outlet [BSP]	P1 [bar]	P3 [bar]	V [r.p.m.]	L1 [mm]	L [mm]
rotation right	rotation left								
TL-BTD111D01	TL-BTD111I01	1.1	3/8"	3/8"	250	300	6000	33	75
TL-BTD116D01	TL-BTD116I01	1.6	3/8"	3/8"	250	300	6000	35	78
TL-BTD118D01	TL-BTD118I01	1.8	3/8"	3/8"	250	300	6000	35.5	78.5
TL-BTD127D01	TL-BTD127I01	2.7	3/8"	3/8"	250	300	6000	37	81
TL-BTD132D01	TL-BTD132I01	3.	3/8"	3/8"	250	300	5000	38	83
TL-BTD137D01	TL-BTD137I01	3.7	3/8"	3/8"	250	300	4500	39	85
TL-BTD148D01	TL-BTD148I01	4.8	3/8"	3/8"	200	250	4000	41	89
TL-BTD158D01	TL-BTD158I01	5.8	1/2"	3/8"	200	250	3500	43	93
TL-BTD163D01	TL-BTD163I01	6.3	1/2"	3/8"	200	250	2900	45	97
TL-BTD180D01	TL-BTD180I01	8.0	1/2"	3/8"	200	250	2100	47	101

# HIGH PRESSURE - pumps

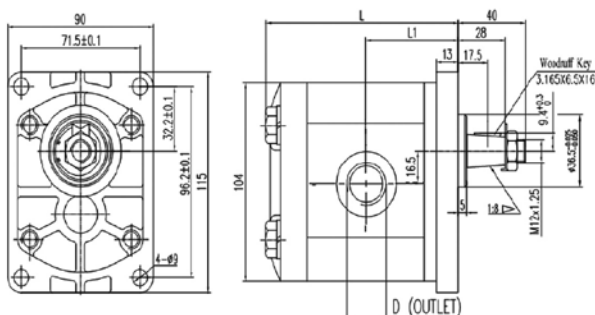
## Gear pumps TRALE

Group 1 - conical 1:8, European cover (Ø 25.4 mm), flanged connection



code		CC [cm³/rev.]	inlet [mm]	outlet [mm]	P1 [bar]	P3 [bar]	V [r.p.m.]	L1 [mm]	L [mm]
rotation right	rotation left								
TL-BTD107D03	TL-BTD107I03	0.7	30	30	250	300	6000	32	74
TL-BTD111D03	TL-BTD111I03	1.1	30	30	250	300	6000	33	75
TL-BTD116D03	TL-BTD116I03	1.6	30	30	250	300	6000	35	78
TL-BTD118D03	TL-BTD118I03	1.8	30	30	250	300	6000	35.5	78.5
TL-BTD127D03	TL-BTD127I03	2.7	30	30	250	300	6000	37	81
TL-BTD132D03	TL-BTD132I03	3.2	30	30	250	300	6000	38	83
TL-BTD137D03	TL-BTD137I03	3.7	30	30	250	300	5000	39	85
TL-BTD148D03	TL-BTD148I03	4.8	30	30	200	250	4000	41	89
TL-BTD158D03	TL-BTD158I03	5.8	30	30	200	250	3500	43	93
TL-BTD163D03	TL-BTD163I03	6.3	30	30	200	250	2900	44	97
TL-BTD180D03	TL-BTD180I03	8.0	30	30	200	250	2100	47	101

Group 2 - conical 1:8, European cover (Ø 36.5 mm), threaded connections



code		CC [cm³/rev.]	inlet [BSP]	outlet [BSP]	P1 [bar]	P3 [bar]	V [r.p.m.]	L1 [mm]	L [mm]
rotation right	rotation left								
TL-BTD240D01	TL-BTD240I01	4	1/2"	1/2"	250	300	3500	43.3	95.5
TL-BTD260D01	TL-BTD260I01	6	1/2"	1/2"	250	300	3500	45	99
TL-BTD280D01	TL-BTD280I01	8	1/2"	1/2"	250	300	3500	46.5	102
TL-BTD2120D01	TL-BTD2120I01	12	1/2"	1/2"	250	300	3500	49.5	108
TL-BTD2140D01	TL-BTD2140I01	14	1/2"	1/2"	250	300	3500	51	111
TL-BTD2160D01	TL-BTD2160I01	16	3/4"	1/2"	250	300	3500	52.5	114
TL-BTD2200D01	TL-BTD2200I01	20	3/4"	1/2"	250	300	3500	56	121
TL-BTD2230D01	TL-BTD2230I01	23	3/4"	1/2"	200	250	3000	58.3	125.5
TL-BTD2250D01	TL-BTD2250I01	25	3/4"	1/2"	200	250	3000	59.5	128
TL-BTD2280D01	TL-BTD2280I01	28	3/4"	1/2"	160	200	3000	62	133
TL-BTD2300D01	TL-BTD2300I01	30	3/4"	1/2"	160	200	3000	63.5	136

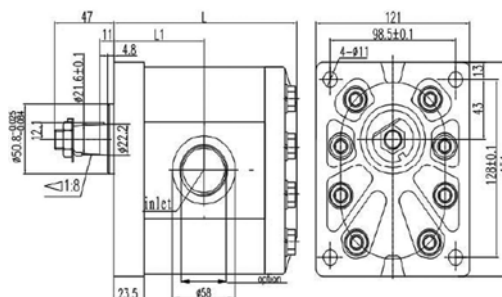




# HIGH PRESSURE - pumps

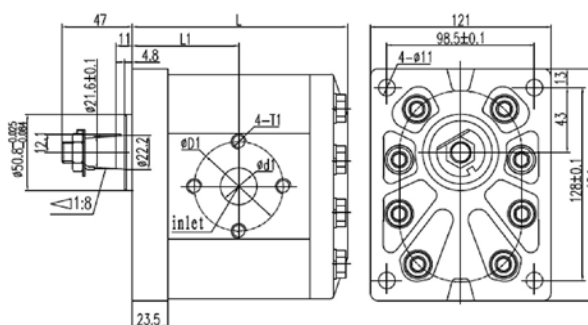
## Gear pumps TRALE

Group 3 - conical 1:8, European cover (Ø 50.8 mm), threaded connections



code		CC [cm³/rev.]	inlet [BSP]	outlet [BSP]	P1 [bar]	P3 [bar]	V [r.p.m.]	L1 [mm]	L [mm]
rotation right	rotation left								
TL-BTD3220D01	TL-BTD3220I01	22	3/4"	3/4"	200	250	3000	65.5	128.5
TL-BTD3260D01	TL-BTD3260I01	26	3/4"	3/4"	200	250	3000	67	131.5
TL-BTD3280D01	TL-BTD3280I01	28	1"	3/4"	200	250	3000	68.5	134
TL-BTD3320D01	TL-BTD3320I01	32	1"	3/4"	200	250	3000	69.8	137
TL-BTD3360D01	TL-BTD3360I01	36	1"	3/4"	200	250	3000	71.8	141
TL-BTD3420D01	TL-BTD3420I01	42	1"	3/4"	200	250	2800	73	143.5
TL-BTD3460D01	TL-BTD3460I01	46	1"	3/4"	200	250	2400	74	146.5
TL-BTD3500D01	TL-BTD3500I01	50	1"	3/4"	200	250	2400	76	149.5
TL-BTD3550D01	TL-BTD3550I01	55	1"	3/4"	200	250	2400	78	152

Group 3 - conical 1:8, European cover (Ø 50.8 mm), flanged connections



code		CC [cm³/rev.]	inlet [mm]	outlet [mm]	P1 [bar]	P3 [bar]	V [r.p.m.]	L1 [mm]	L [mm]
rotation right	rotation left								
TL-BTD3220D02	TL-BTD3220I02	22	40	40	200	250	3000	65.5	128.5
TL-BTD3260D02	TL-BTD3260I02	26	40	40	200	250	3000	67	131.5
TL-BTD3280D02	TL-BTD3280I02	28	40	40	200	250	3000	68.5	134
TL-BTD3340D02	TL-BTD3340I02	34	50	40	200	250	3000	69.8	137
TL-BTD3390D02	TL-BTD3390I02	39	50	40	200	250	3000	71.8	141
TL-BTD3430D02	TL-BTD3430I02	43	50	40	200	250	2800	73	143.5
TL-BTD3460D02	TL-BTD3460I02	46	50	40	200	250	2400	74	146.5
TL-BTD3510D02	TL-BTD3510I02	51	50	40	200	250	2400	76	149.5
TL-BTD3550D02	TL-BTD3550I02	55	50	40	200	250	2400	78	152

## HIGH PRESSURE - pumps

### Gear pumps SALAMI

Positive displacement, external gear pumps intended for hydraulic systems of machines and devices. The mounting plates, shafts and connections are compliant with European and German standards. The pumps are available as single or multiple versions. The displacement ranges from 1.4 to 98 cm<sup>3</sup>/r.p.m. at the maximum working pressure 280 bar, however depends on the pump type. Some types are available as hydraulic motors.

pump type	displacement [cm <sup>3</sup> /r.p.m.]	construction
1.5PE*	1.4 ÷ 11	Cast iron mounting plate and rear cover, housing made of aluminium
2PE*	4.5 ÷ 26	Cast iron mounting plate and rear cover, housing made of aluminium
2.5PB*	11.5 ÷ 44	Cast iron mounting plate and rear cover, housing made of aluminium
3PE*	21 ÷ 75	Cast iron mounting plate and rear cover, housing made of aluminium
3.5PC*	55 ÷ 98	Cast iron mounting plate and rear cover, housing made of aluminium
PG331	23 ÷ 80	Mounting plate, housing and rear cover made of spheroidal cast iron

\* - available as hydraulic motors as well



**2PE type**



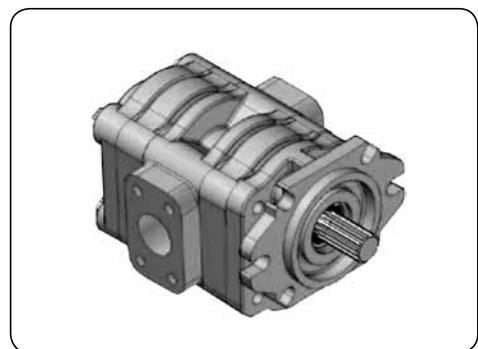
**2.5PB type**



**3PE type**



**3.5PC type**



**PG331 type**

# HIGH PRESSURE - pumps

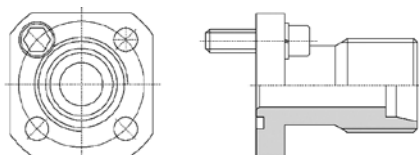
## Flange connectors

**Material:** Zinc-plated steel (standard), AISI 316L steel (option)

**Working temp.:** From -20°C up to +100°C (NBR seal), from -20°C up to +200°C (Viton seal)

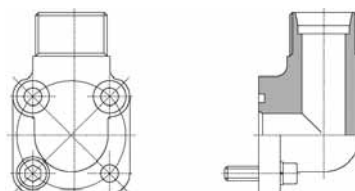
Compact flange connectors with square flange heads, bolt circle diameter from 26 mm up to 72.5 mm with metric and BSP threads used to connect hydraulic pumps. Equipped with a set of bolts, washers and O-rings as a standard.

Flange connector with 4 bolt holes / DIN 2353



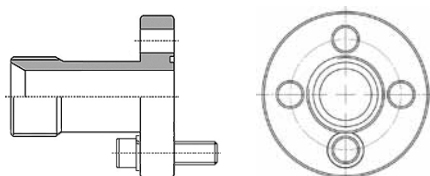
press. [bar]	code	bolt circle diameter [mm]	pipe O.D [mm]	thread size [mm]	bolt size [mm]
315	HK-A-35-10L	35	10	16x1.5	4 x M6
	HK-A-35-12L		12	18x1.5	
250	HK-A-35-15L		15	22x1.5	
315	HK-A-35-16S		16	24x1.5	
100	HK-A-40-15L	40	15	22x1.5	
	HK-A-40-18L		18	26x1.5	
250	HK-A-40-20S		20	30x2	
100	HK-A-40-22L		22	30x2	
	HK-A-40-28L		28	36x2	
250	HK-A-55-20S	55	20	30x2	4 x M8
	HK-A-55-25S		25	36x2	
	HK-A-55-30S		30	42x2	
100	HK-A-55-35L		35	45x2	

Flange connector with 4 bolt holes / DIN 2353



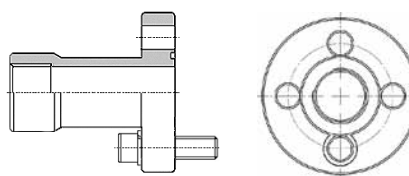
press. [bar]	code	bolt circle diameter [mm]	pipe O.D [mm]	thread size [mm]	bolt size [mm]
315	HK-A-90-35-10L	35	10	16x1.5	4 x M6
	HK-A-90-35-12L		12	18x1.5	
250	HK-A-90-35-15L		15	22x1.5	
315	HK-A-90-35-16S		16	24x1.5	
100	HK-A-90-40-15L	40	15	22x1.5	
	HK-A-90-40-18L		18	26x1.5	
250	HK-A-90-40-20S		20	30x2	
100	HK-A-90-40-22L		22	30x2	
	HK-A-90-40-28L		28	36x2	
250	HK-A-90-55-20S	55	20	30x2	4 x M8
	HK-A-90-55-25S		25	36x2	
	HK-A-90-55-30S		30	42x2	
100	HK-A-90-55-35L		35	45x2	
250	HK-A-90-55-38S		38	52x2	
100	HK-A-90-55-42L		42	52x2	

Square flange connector with 4 bolt holes / BSP male 60°



press. [bar]	code	bolt circle diameter [mm]	thread size [inch]	bolt size [mm]
250	HK-A-BZ-30-08	30	1/2	4 x M6
	HK-A-BZ-40-12	40	3/4	4 x M8
	HK-A-BZ-51-16	51	1	4 x M10
	HK-A-BZ-56-16	56	1	

Square flange connector with 4 bolt holes / BSP female

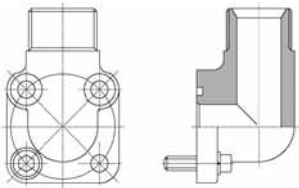


press. [bar]	code	bolt circle diameter [mm]	thread size [inch]	bolt size [mm]
250	HK-A-BW-30-08	30	3/8	4 x M6
	HK-A-BW-40-12	40	1/2	4 x M8
	HK-A-BW-51-16	51	3/4	4 x M10
	HK-A-BW-56-16	56	3/4	

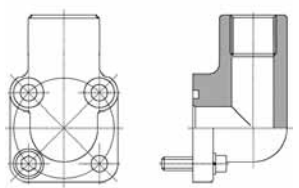
# HIGH PRESSURE - pumps

## Flange connectors

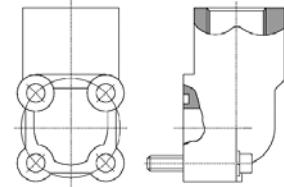
90° flange connector with 4 bolt holes / BSP male 60°

				
press. [bar]	code	bolt circle diameter [mm]	thread size [inch]	bolt size [mm]
315	HK-A-BZ-90-35-06	35	3/8	4 x M6
	HK-A-BZ-90-35-08		1/2	
	HK-A-BZ-90-35-12		3/4	
250	HK-A-BZ-90-40-06	40	3/8	
	HK-A-BZ-90-40-08		1/2	
	HK-A-BZ-90-40-12		3/4	
	HK-A-BZ-90-40-16		1	
315	HK-A-BZ-90-55-08	55	1/2	4 x M8
	HK-A-BZ-90-55-12		3/4	
	HK-A-BZ-90-55-16		1	

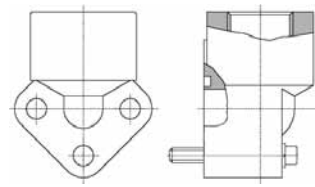
90° flange connector with 4 bolt holes / BSP female

				
press. [bar]	code	bolt circle diameter [mm]	thread size [inch]	bolt size [mm]
315	HK-A-BW-90-35-06	35	3/8	4 x M6
	HK-A-BW-90-35-08		1/2	
250	HK-A-BW-90-40-06	40	3/8	
	HK-A-BW-90-40-08		1/2	
	HK-A-BW-90-40-12		3/4	
315	HK-A-BW-90-55-08	55	1/2	4 x M8
	HK-A-BW-90-55-12		3/4	
	HK-A-BW-90-55-16		1	

90° flange connector with 4 bolt holes / BSP female (alum.)

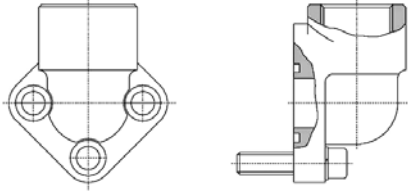
				
press. [bar]	code	bolt circle diameter [mm]	thread size [inch]	bolt size [mm]
180	HK-A-BW-90-30-06-AL	30	3/8	4 x M6
	HK-A-BW-90-30-08-AL		1/2	
	HK-A-BW-90-35-06-AL	35	3/8	
	HK-A-BW-90-35-08-AL		1/2	
	HK-A-BW-90-40-08-AL	40	1/2	
	HK-A-BW-90-40-12-AL		3/4	
	HK-A-BW-90-55-12-AL	55	3/4	4 x M8
	HK-A-BW-90-55-16-AL		1	

90° flange connector with 3 bolt holes / BSP female (alum.)

				
press. [bar]	code	bolt circle diameter [mm]	thread size [inch]	bolt size [mm]
180	HK-B-BW-90-26-06-AL	26	3/8	3 x M5
	HK-B-BW-90-26-08-AL		1/2	
	HK-B-BW-90-30-06-AL	30	3/8	3 x M6
	HK-B-BW-90-30-08-AL		1/2	
	HK-B-BW-90-40-08-AL	40	1/2	3 x M8
	HK-B-BW-90-40-12-AL		3/4	
	HK-B-BW-90-51-12-AL	51	3/4	3 x M10
	HK-B-BW-90-51-16-AL		1	

## Flange connectors

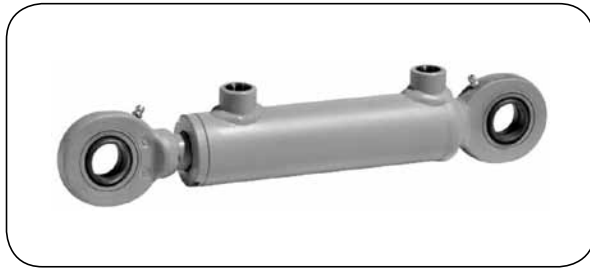
90° flange connector with 3 bolt holes / BSP female



press. [bar]	code	bolt circle diameter [mm]	thread size [inch]	bolt size [mm]
300	HK-B-BW-90-26-06	26	3/8	3 x M5
	HK-B-BW-90-26-08		1/2	
	HK-B-BW-90-30-06	30	3/8	3 x M6
	HK-B-BW-90-30-08		1/2	
	HK-B-BW-90-40-08	40	1/2	3 x M8
	HK-B-BW-90-40-12		3/4	
	HK-B-BW-90-51-12	51	3/4	3 x M10
	HK-B-BW-90-51-16		1	
	HK-B-BW-90-56-12	56	3/4	
	HK-B-BW-90-56-16		1	
	HK-B-BW-90-62-16	62	1	3 x M12
	HK-B-BW-90-62-20		1.1/4	
	HK-B-BW-90-72-20	72.5	1.1/4	
	HK-B-BW-90-72-24		1.1/2	



## HIGH PRESSURE - hydraulic cylinders



### HPA, HPE type

<b>Material:</b>	Carb. steel and cast iron (head)
<b>Sealing:</b>	PU, NBR, POM, TPE
<b>Protective coating:</b>	Primer (option), chromium-plated piston rod
<b>Medium:</b>	Hydraulic oil
<b>Max. piston speed :</b>	0.5 m/s
<b>Max. working press.:</b>	200 bar
<b>Working temp.:</b>	From -20°C up to +100°C

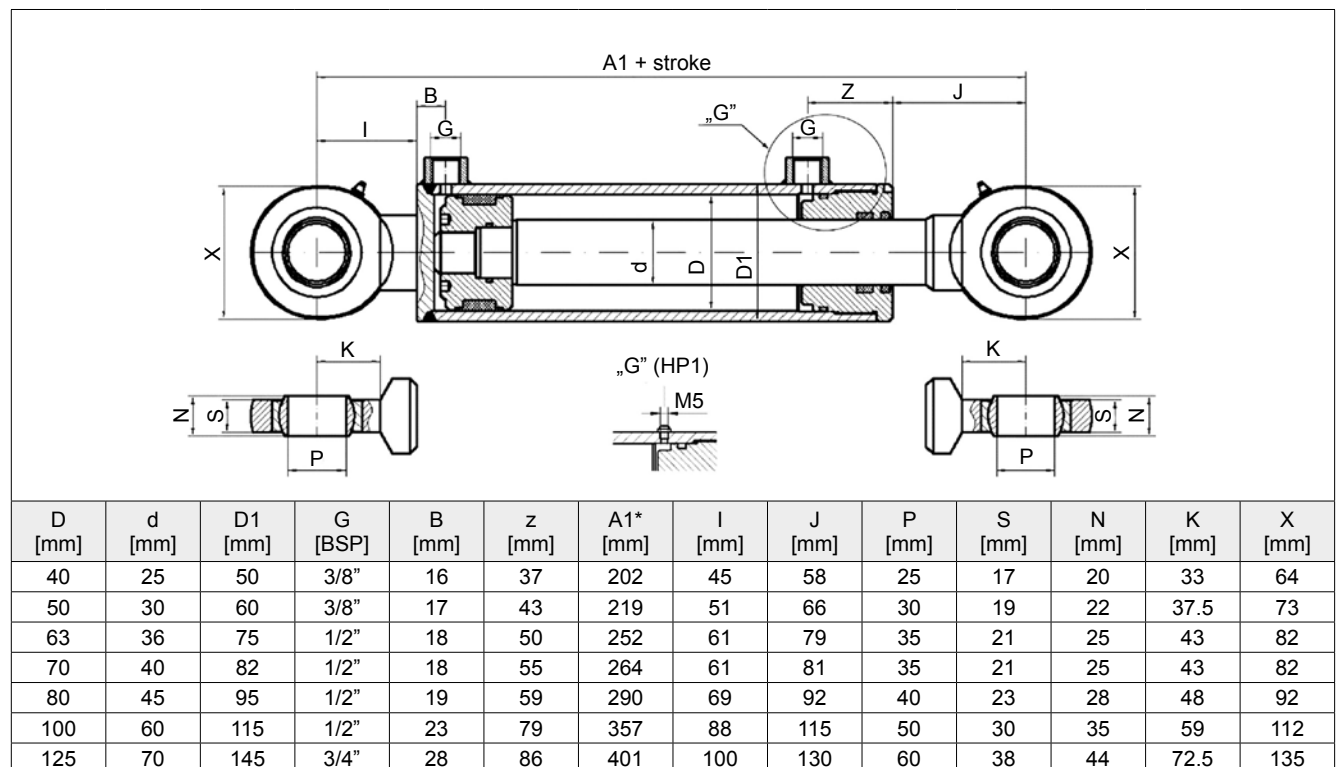
Single-acting and double-acting hydraulic cylinders are used in the hydraulic systems of cranes, jacks, construction machinery, farm machinery, etc. The single-acting cylinders are fitted with a vent. The complete HP cylinder includes mounting elements. The most frequently used mounting element is an eye (with a grease nipple): eye with a spherical plain bearing (standard) or eye with a bushing (option). The eyes are welded to the cylinder and to the piston rod. The rod end with a thread can also be fitted with a threaded eye.

Code example of a cylinder: HS-HPA1-100-60-0300

where:

- HPA1 - cylinder type
- 100 - piston diameter [mm]
- 60 - piston rod diameter [mm]
- 300 - cylinder stroke [mm]

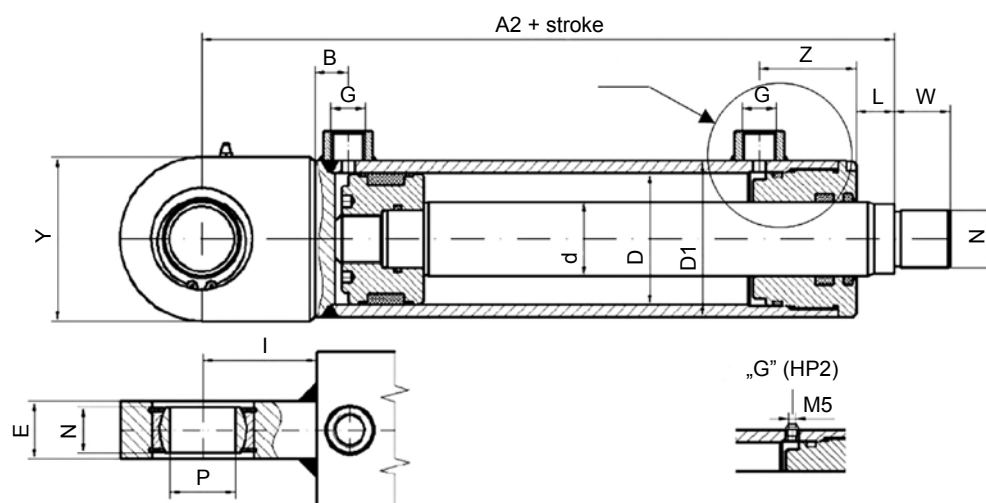
Dimensions of HPA1 double-acting cylinder and HPE1 single-acting cylinder, both cylinder and piston rod are eye-mounted (HPE1 has a vent - detail „G” and a single head sealing):



\* - the stroke of a cylinder depends on individual needs of a customer and ranges from 1 to 2000 mm

## HIGH PRESSURE - hydraulic cylinders

Dimensions of HPA2 double-acting cylinder and HPE2 single-acting cylinder, with an eye-mounted cylinder and threaded rod end (HPE2 has a vent - detail „G” and a single head sealing):



D [mm]	d [mm]	D1 [mm]	G [BSP]	B [mm]	z [mm]	A2* [mm]	I [mm]	P [mm]	N [mm]	E [mm]	Y [mm]	L [mm]	W [mm]	M [mm]
40	25	50	3/8"	16	37	157	45	25	20	23	55	13	15	M16x1.5
50	30	60	3/8"	17	43	168	51	30	22	28	65	15	21	M22x1.5
63	36	75	1/2"	18	50	191	61	35	25	30	83	18	27	M28x1.5
70	40	82	1/2"	18	55	203	61	35	25	30	83	20	27	M28x1.5
80	45	95	1/2"	19	59	221	69	40	28	35	100	23	34	M35x1.5
100	60	115	1/2"	23	79	269	88	50	35	40	123	27	44	M45x1.5
125	70	145	3/4"	28	86	301	100	60	44	50	140	30	57	M58x1.5

\* - the stroke of a cylinder depends on individual needs of a customer and ranges from 1 to 2000 mm

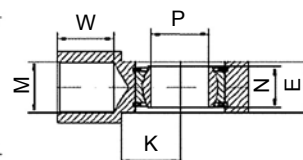
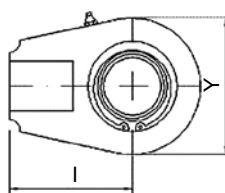
### Eyes with spherical plain bearings for HP cylinders with threaded rod ends



KTU (with lock)



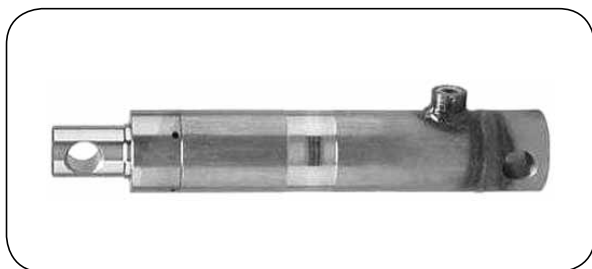
KTN (without lock)



code		M [mm]	P [mm]	N [mm]	E [mm]	K [mm]	W [mm]	I [mm]	Y [mm]
KTU type	KTN type								
HS-HP-KT25U	HS-HP-KT25N	M16x1.5	25	20	23	28	17	50	56
HS-HP-KT30U	HS-HP-KT30N	M22x1.5	30	22	28	30	23	60	64
HS-HP-KT35U	HS-HP-KT35N	M28x1.5	35	25	30	38	29	70	78
HS-HP-KT40U	HS-HP-KT40N	M35x1.5	40	28	35	45	36	85	94
HS-HP-KT50U	HS-HP-KT50N	M45x1.5	50	35	40	55	46	105	116
HS-HP-KT60U	HS-HP-KT60N	M58x1.5	60	44	50	65	59	130	130



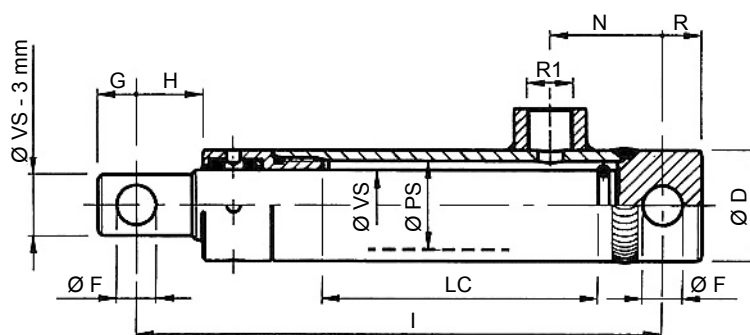
## HIGH PRESSURE - hydraulic cylinders



### SE 25, SE 30, SE 40 type

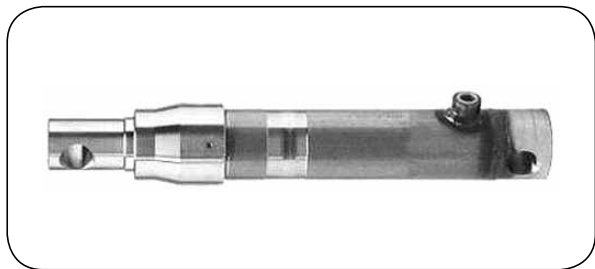
<b>Material:</b>	Carbon steel and cast iron (head)
<b>Sealing:</b>	PU, NBR
<b>Protective coating:</b>	No coating, chromium-plated piston rod
<b>Medium:</b>	Hydraulic oil
<b>Max. working press.:</b>	210 bar
<b>Working temp.:</b>	From -30°C up to +110°C

Single-acting hydraulic cylinder with a threaded head, designed for high pressure hydraulic systems. Depending on the application, appropriate cylinder output force (given in kg/100 bar) and stroke LC must be selected. Seal sets are available on request.



code	Ø VS [mm]	Ø PS [mm]	Ø D [mm]	Ø F [mm]	R [mm]	R1 [BSP]	G [mm]	H [mm]	N [mm]	LC [mm]	I [mm]	kg/100 bar	weight [kg]
SE 25 type													
HS-SE25100	25	32	40	14.2	14	3/8"	14	24	40	100	190	490	1.50
HS-SE25150										150	240		2.00
HS-SE25200										200	290		2.50
HS-SE25250										250	340		3.00
HS-SE25300										300	390		3.50
SE 30 type													
HS-SE30150	30	40	50	16.4	15	3/8"	16	26	44	150	250	706	3.50
HS-SE30200										200	300		4.00
HS-SE30250										250	350		4.00
HS-SE30300										300	400		5.50
HS-SE30350										350	450		6.00
HS-SE30400										400	500		6.50
HS-SE30450										450	550		7.00
HS-SE30550										550	650		8.00
HS-SE30700										700	800		10.00
SE 40 type													
HS-SE40200	40	50	60	22.4	22	3/8"	22	32	48	200	330	1250	7.00
HS-SE40250										250	380		7.50
HS-SE40300										300	430		8.00
HS-SE40350										350	480		8.50
HS-SE40400										400	530		10.00
HS-SE40450										450	580		11.00
HS-SE40500										500	630		12.00
HS-SE40550										550	680		12.50
HS-SE40600										600	730		13.50
HS-SE40700										700	830		15.00

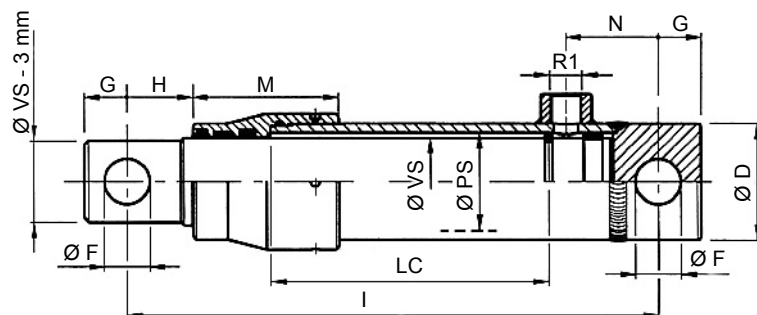
## HIGH PRESSURE - hydraulic cylinders



### SE 45, SE 50, SE 55, SE 60 type

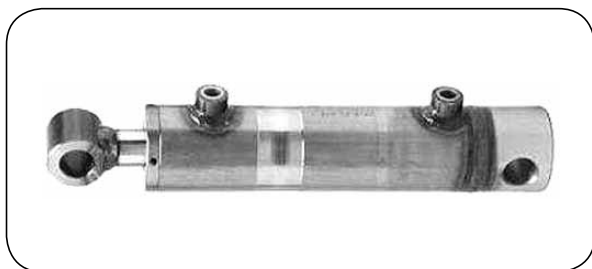
<b>Material:</b>	Carbon steel
<b>Sealing:</b>	PU, POM, NBR
<b>Protective coating:</b>	No coating, chromium-plated piston rod
<b>Medium:</b>	Hydraulic oil
<b>Max. working press.:</b>	210 bar
<b>Working temp.:</b>	From -30°C up to +110°C

Single-acting hydraulic cylinder with a threaded head, designed for high pressure hydraulic systems. Depending on the application, appropriate cylinder output force (given in kg/100 bar) and stroke LC must be selected. Seal sets are available on request.



code	Ø VS [mm]	Ø PS [mm]	Ø D [mm]	Ø F [mm]	M [mm]	R1 [BSP]	G [mm]	H [mm]	N [mm]	LC [mm]	I [mm]	kg/100 bar	weight [kg]
SE 45 type													
HS-SE45200	45	50	60	23.4	75	3/8"	22	34	47	200	330	1590	8.00
HS-SE45300										300	430		10.00
HS-SE45400										400	530		12.00
HS-SE45550										550	680		15.00
HS-SE45700										700	830		18.00
SE 50 type													
HS-SE50200	50	55	65	25.5	80	3/8"	25	49	50	200	360	1960	11.50
HS-SE50300										300	460		14.00
HS-SE50400										400	560		16.00
HS-SE50550										550	710		19.50
HS-SE50700										700	860		23.00
SE 55 type													
HS-SE55300	55	60	70	25.5	95	3/8"	25	41	50	300	460	2370	15.50
HS-SE55550										550	710		22.50
HS-SE55700										700	860		26.50
SE 60 type													
HS-SE60200	60	65	75	25.5	95	3/8"	25	36	50	200	360	2820	15
HS-SE60300										300	460		18
HS-SE60400										400	560		21
HS-SE60550										550	710		25.5
HS-SE60700										700	860		30

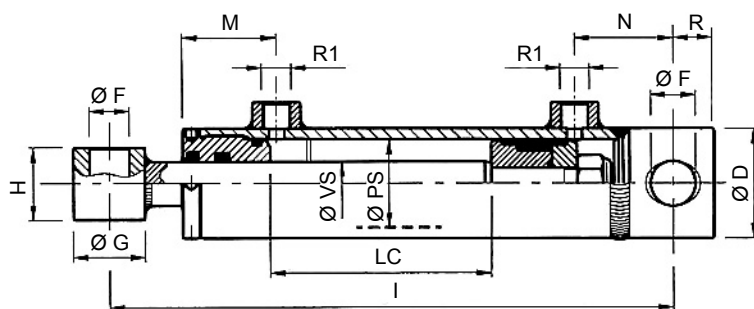
## HIGH PRESSURE - hydraulic cylinders



### DE 20, DE 25, DE 30 type

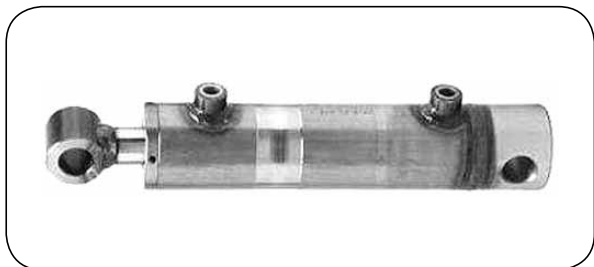
**Material:** Carbon steel and cast iron (head)  
**Sealing:** PU, NBR  
**Protective coating:** No coating, chromium-plated piston rod  
**Medium:** Hydraulic oil  
**Max. working press.:** 180 bar  
**Working temp.:** From -30°C up to +110°C

Double-acting hydraulic cylinder with a threaded head, designed for high pressure hydraulic systems. Depending on the application, appropriate cylinder output force (given in kg/100 bar) and stroke LC must be selected. Seal sets are available on request.



code	Ø VS [mm]	Ø PS [mm]	Ø D [mm]	Ø F [mm]	M [mm]	R1 [BSP]	G [mm]	H [mm]	N [mm]	LC [mm]	I [mm]	kg/100 bar	weight [kg]
DE 20 type													
HS-DE2032050	20	32	40	16.4	43	1/4"	28	35	38	50	205	800	2.00
HS-DE2032100										100	255		2.50
HS-DE2032150										150	305		3.00
HS-DE2032200										200	355		3.00
HS-DE2032250										250	405		3.50
HS-DE2032300										300	455		4.00
DE 25 type													
HS-DE2540100	25	40	50	20.5	43	3/8"	35	40	45	100	270	1250	3.50
HS-DE2540150										150	320		4.00
HS-DE2540200										200	370		4.50
HS-DE2540250										250	420		5.00
HS-DE2540300										300	470		5.50
HS-DE2540400										400	570		6.50
HS-DE2540500										500	670		7.50
DE 30 (1) type													
HS-DE3050100	30	50	60	25.5	46	3/8"	45	45	58	100	300	1960	5.50
HS-DE3050150										150	350		6.00
HS-DE3050200										200	400		6.50
HS-DE3050250										250	450		7.50
HS-DE3050300										300	500		8.00
HS-DE3050400										400	600		9.00
HS-DE3050500										500	700		10.50
HS-DE3050600										600	800		11.50
HS-DE3050700										700	900		13.00
HS-DE3050800										800	1000		14.00
HS-DE3050900										900	1100		15.50
HS-DE3060100	60	70	51							100	300	2820	6.50
HS-DE3060150										150	350		7.50
HS-DE3060200										200	400		8.00
HS-DE3060250										250	450		8.50
HS-DE3060300										300	500		9.50
HS-DE3060350										350	550		10.00

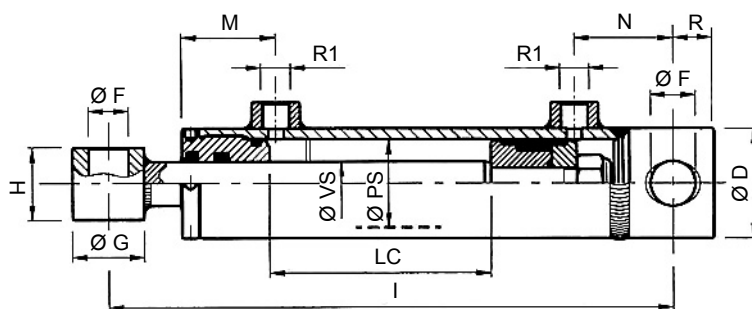
## HIGH PRESSURE - hydraulic cylinders



### DE 30, DE 40, DE 50, DE 70 type

**Material:** Carbon steel and cast iron (head)  
**Sealing:** PU, NBR  
**Protective coating:** No coating, chromium-plated piston rod  
**Medium:** Hydraulic oil  
**Max. working press.:** 180 bar  
**Working temp.:** From -30°C up to +110°C

Double-acting hydraulic cylinder with a threaded head, designed for high pressure hydraulic systems. Depending on the application, appropriate cylinder output force (given in kg/100 bar) and stroke LC must be selected. Seal sets are available on request.



code	Ø VS [mm]	Ø PS [mm]	Ø D [mm]	Ø F [mm]	M [mm]	R1 [BSP]	G [mm]	H [mm]	N [mm]	LC [mm]	I [mm]	kg/100 bar	weight [kg]
DE 30 (2) type													
HS-DE3060400	30	60	70	25.5	25	51	3/8"	45	45	58	600	2820	11.00
HS-DE3060450											650		11.50
HS-DE3060500											700		12.00
HS-DE3060600											800		13.50
HS-DE3060700											900		15.00
DE 40 type													
HS-DE4070200	40	70	80	30.5	51	3/8"	54	55	58	200	410	3840	11.00
HS-DE4070250										250	460		11.50
HS-DE4070300										300	510		12.50
HS-DE4070350										350	560		13.50
HS-DE4070400										400	610		14.50
HS-DE4070450										450	660		15.50
HS-DE4070500										500	710		16.50
HS-DE4070600										600	810		18.50
HS-DE4070700										700	910		20.50
HS-DE4080200		80	92	62						200	410	5020	14.50
HS-DE4080250										250	460		15.50
HS-DE4080300										300	510		17.00
HS-DE4080350										350	560		18.00
HS-DE4080400										400	610		19.50
HS-DE4080500										500	710		21.00
HS-DE4080600										600	810		23.50
HS-DE4080700										700	910		26.00
DE 50 type													
HS-DE50100300	50	100	115	30.5	81	3/8"	54	70	60	300	545	7850	29.00
HS-DE50100400										400	645		32.50
HS-DE50100500										500	745		36.00
HS-DE50100700										700	945		43.00
HS-DE50100900										900	1145		50.00
DE 70 type													
HS-DE70120500	70	120	140	40.5	81	1/2"	70	80	65	500	770	11300	62.00
HS-DE701201000										1000	1270		93.50

## HIGH PRESSURE - power units

„POWER PACK” compact hydraulic power units are designed to operate single-acting and double-acting cylinders in simple high pressure hydraulic systems. The power units, in a basic configuration, include an electric motor connected to an oil-immersed hydraulic pump. Depending on application requirements, the power unit can be additionally equipped with, for example: safety valve (system pressure set to the maximum), solenoid valves NO/NC (single-acting cylinder operation), NG6 directional control valve (double-acting cylinder operation), throttle valve (cylinder fall speed control), oil filter, pressure switch, remote control set (emitter - receiver), control module (2 or 4 switches), etc.

Typical applications include: trucks (lift and dump trailer mechanism, tow truck with hydraulic platform), car lift, recycling press, scissor lift, etc.

description	
power	direct current (12V DC, 24V DC), alternating current (230V - 1 phase; 230/400V - 3 phase)
motor	0.5 ÷ 5.5 [kW]
control voltage	12V DC, 24V DC, 115V AC, 230V AC
displacement	1.1 ÷ 9.8 [cm <sup>3</sup> /rev]
working pressure	up to 250 bar
tank volume	1 ÷ 30 liters



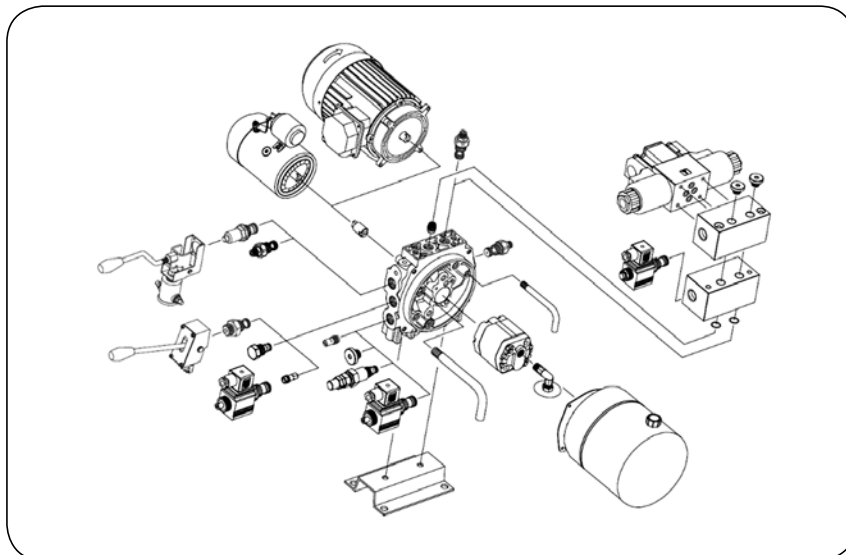
basic hydraulic power unit



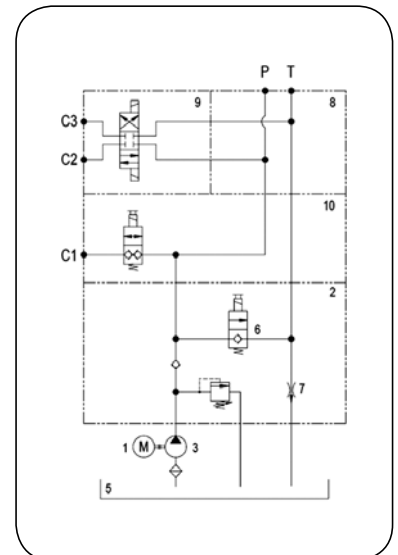
power unit for  
single-acting cylinder



power unit for  
double-acting cylinder



assembly diagram

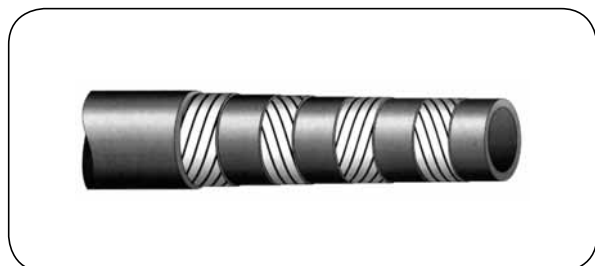


hydraulic circuit diagram

## HIGH PRESSURE - UHP equipment

UHP (Ultra High Pressure) equipment includes hoses, hose assemblies, fittings, adapters and accessories designed to operate under pressure of 700 bar or above. The range comprises: WATERBLAST rubber hoses (working pressure from 700 to 1450 bar), thermoplastic hoses (working pressure 700 ÷ 800 bar), SPIR STAR® hoses (working pressure to 4000 bar). Depending on application, these working pressures values are obtained at different safety factors (WATERBLAST  $n = 2.5$ , hydraulics  $n = 4$ , gases  $n = 4$  to 6). The selection of UHP fittings, adapters, quick release couplings and crimping method must always be determined by pressure in a particular application. Hose assemblies must always be pressure tested.

### WATERBLAST hoses



#### WATERBLAST

**Internal layer:** Black oil-resistant synthetic rubber  
**Reinforcement:** Four or six steel wire spirals  
**External layer:** Black synthetic rubber resistant to oil and abrasion  
**Working temp.:** From -10°C up to +70°C  
 (temporary from -40°C up to +100°C)

Hose designed for water installations and high pressure equipment. Used in water jet cutting and water jet cleaning equipment. Application: cleaning of chemical and power supply installations, cleaning and cutting of concrete constructions, road surface, cleaning of steel surface, steelworks, tanks, vessels, mining installations, etc.

WATERBLAST hoses should not be used for oil hydraulics.

As high temperatures strongly affect the properties of rubber, the working pressure should be reduced down to about 80% of nominal pressure at a temperature above +70°C and to about 60% at a temperature of +90°C and above. Safety factor: about 2.5:1.

#### WATERBLAST 4

code	I.D.		O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
	[inch]	[mm]					
SL-WBL4-10	3/8	9.5	21.3	850	2125	150	0.76
SL-WBL4-13	1/2	12.7	24.6	800	2000	180	0.89
SL-WBL4-19	3/4	19	32	750	1850	220	1.52
SL-WBL4-25	1	25.4	38.4	700	1700	300	2.10

#### WATERBLAST 4 PLUS

code	I.D.		O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
	[inch]	[mm]					
SL-WBL4P-06	1/4	6.4	17.6	1250	3125	200	0.61
SL-WBL4P-10	3/8	9.5	21.4	1250	3125	210	0.88
SL-WBL4P-13	1/2	12.7	24.6	1100	2750	230	1.22
SL-WBL4P-19	3/4	19	32	1100	2750	250	1.83

#### WATERBLAST 6

code	I.D.		O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
	[inch]	[mm]					
SL-WBL6-13	1/2	12.7	27.8	1450	3625	250	1.82

# HIGH PRESSURE - UHP equipment

## WATERBLAST hoses standard fittings

fitting	thread size	hose I.D.			
		1/4"	3/8"	1/2"	3/4"
BSP female thread (60° cone)	1/4"	TI-WBW110-04-04SL	-	-	-
	3/8"	-	TI-WBW110-06-06SL	-	-
	1/2"	-	-	TI-WBW110-08-08SL	-
BSP male thread (60° cone)	1/4"	TI-WBZ110-04-04SL	-	-	-
	3/8"	-	TI-WBZ110-06-06SL	-	-
	1/2"	-	-	TI-WBZ110-08-08SL	-
metric female thread (24° cone) O-ring, DKOL	M22x1.5	-	TI-WMW121-22-06SL	TI-WMW121-22-08SL	-
metric female thread (24° cone) O-ring, DKOS	M20x1.5	-	TI-WMW122-20-06SL	-	-
	M22x1.5	-	TI-WMW122-22-06SL	TI-WMW122-22-08SL	-
	M24x1.5	-	-	TI-WMW122-24-08SL	-
metric female thread (24° cone) without O-ring, DKL	M22x1.5	-	-	TI-WMW111-22-08SL	-
metric male thread (24° cone) CES	M24x1.5	-	-	TI-WMZ112-24-08SL	-
	M36x2	-	-	-	TI-WMW122-36-12SL

Fitting material: galvanized carbon steel.  
Other types of fittings available on request.

### Safety guidelines for operators of WATERBLAST hoses:

- High water pressure is dangerous - can cause death, body injury or property damage. Always wear protective clothing, glasses, gloves and shoes.
- Hose assemblies can only be operated by trained personnel.
- Operation area must be safe from third party and marked properly.
- Never use a hose above its working pressure and below its minimal bending radius.
- Always visually check an assembly before operation.
- Never use hoses with corroded, leaking, worn or damaged fittings. Such a hose must be removed from service immediately.
- Hose assemblies with blisters, cuts or exposed reinforcement must be removed from service.
- Do not use a hose with kinks, squeezes or other signs of damage. It must be removed from service.
- Do not use a hose that has been exposed to chemical attack or to high temperature. It must be removed from service.
- While in service, a hose should not be exposed to kinking, twisting, straining or contact with sharp edges.
- Hose may change in length by a few per cent when pressurized. Allowance should be made to provide slack to compensate for any changes in length.
- Several hose lengths can be joined up using high pressure couplings. It is not recommended to hang connected pieces or suspend a hose under its own weight.
- Always clean, drain and coil hoses after use.

### Complete WATERBLAST hose assemblies



TUBES INTERNATIONAL® provides complete WATER-BLAST hose assemblies. Each hose assembly is hydrostatically tested under pressure (150% of its working pressure) and is supplied with a quality certificate.

## HIGH PRESSURE - UHP equipment

### Thermoplastic hoses UHP (≥700 bar)

Thermoplastic hoses are designed for pressure not exceeding 800 bar. The external layer is made of abrasion resistant polyurethane, internal layer of polyester or polyamide reinforced by max 3 layers of steel or aramid fibre. Widely used in hydraulic systems, rescue equipment, lifts and pumps for hydraulic oil, paints, solvents, isocyanates and polyols. Working temperature ranges from -40 °C up to 100°C (for water and water-based liquids max. +70°C). Use P type ferrules (IT-142).


code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]	ferrule
1 type (STANDARD)	Hose intended for high pressure hydraulic systems. Internal layer: polyester. Reinforcement: aramid fibre layer + steel layer. External layer: black polyurethane. * - hose reinforced with two aramid fibre layers.						
UH-OL8M-06*	6.4	14.8	700	2800	50	15.90	**
UH-MTKH-06	6.4	14.5			40	26.00	PSAF
UH-0412-06	6.6	12.7			35	18.00	
UH-0414-10	9.8	18.7			90	33.00	
2 type (TWIN)	Twin hose comprises two STANDARD type hoses. Internal layer: polyester. Reinforcement: aramid fibre layer + steel layer. External layer: black polyurethane.						
UH-MTKHB-06	6.4	14.5	700	2800	40	52.00	**
UH-1412-06	6.6	12.7			35	36.00	PSAF
UH-1414-10	9.8	18.7			90	66.00	
3 type (NON CONDUCTIVE)	Non-conductive hose according to SAE 100 R8 standard less than 50 µA leakage when subjected to 246 kV/m for 5 min. used near electrical installations. Internal layer: polyester. Reinforcement: two aramid fibre layers. External layer: orange polyurethane.						
UH-0460-04	4	9.1	700	2800	25	6.00	PSAF
UH-OL8MNC-06	6.4	14.8			50	15.90	**
UH-0462-06	6.6	14			35	14.50	PSAF
4 type (MARINE)	Hose resistant to sea water. used in marine industry. Internal layer: polyester. Reinforcement: aramid fibre layer + steel layer. External layer: black polyurethane. * - hose reinforced with two aramid fibre layers.						
UH-OL8MMARINE-06*	6.4	14.8	700	2800	50	15.90	**
UH-MTKHMARINE-06	6.4	14.5			40	26.00	PSAF
UH-0402-06	6.6	12.7			35	18.00	
UH-0404-10	9.8	18.7			90	33.00	
5 type (CHEMICAL)	Hose used to transfer aggressive chemicals. such as paint. solvents. Internal layer: polyamide. Reinforcement: aramid fibre layer + steel layer. External layer: black polyurethane.						
UH-MTK-06	6.4	14.5	700	2800	40	25.40	**
UH-0482-06	6.6	12.7			35	18.00	PSAF
UH-MTKMMARINE-10	9.5	18.8			90	37.50	**
UH-0484-10	9.8	18.7			90	32.00	PSAF
6 type (ANTISTATIC)	Antistatic hose (R < 3x10 <sup>4</sup> Ω/m) designed for non-conductive media transfer. Internal layer: polyamide. Reinforcement: two aramid fibre layers. External layer: blue polyurethane.						
UH-AS8M-06	6.4	14.8	700	2800	50	15.00	**
7 type (EXTRA)	Hose for hydraulic systems working under 800 bar pressure. Internal layer: polyester. Reinforcement: two aramid fibre layers + steel layer. External layer: black polyurethane.						
UH-0802-06	6.6	14.5	800	3200	35	24.50	PSAF

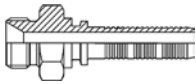
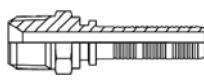
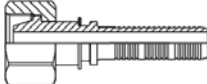
\*\* - contact Technical Department of TUBES INTERNATIONAL®

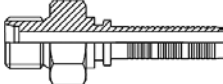
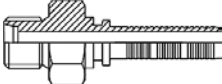
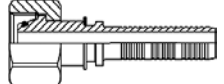
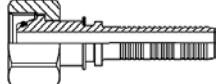


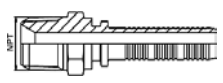
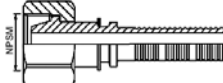
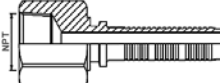
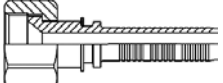
# HIGH PRESSURE - UHP equipment

## UHP (≥700 bar) fittings for thermoplastic hoses

TI-P (700, 800 bar)		Crimping ferrules		
hose I.D. [inch]			-	
		code	ferrule I.D.	
5/32		TI-PSAF-025-TO	9.8 mm	-
1/4		TI-PSAF-04-TO	15 mm	-
3/8		TI-PSAF-06-TO	20 mm	-

TI-P (700, 800 bar)		BSP (BSPT) thread, 60° cone			
thread size [inch]	hose I.D. [inch]	AGR	AGR-K	DKR	-
					-
		code	code	code	-
1/4	5/32	TI-PBZ110-04-025-TO	-	TI-PBW110-04-025-TO	-
1/4	1/4	TI-PBZ110-04-04-TO	-	TI-PBW110-04-04-TO	-
3/8		TI-PBZ110-06-04-TO	TI-PBZ130-06-04-TO	-	-
3/8	3/8	TI-PBZ110-06-06-TO	-	TI-PBW110-06-06-TO	-

TI-P (700, 800 bar)		Metric thread - 24° cone			
thread size [inch]	hose I.D. [inch]	CEL	CES	DKOL	DKOS
					
		code	code	code	code
M14x1.5	1/4	TI-PMZ111-14-04-TO	-	TI-PMW121-14-04-TO	TI-PMW122-14-04-TO
M16x1.5		-	-	-	TI-PMW122-16-04-TO
M18x1.5		-	TI-PMZ112-18-04-TO	-	TI-PMW122-18-04-TO
M22x1.5		-	-	-	TI-PMW122-22-04-TO
M24x1.5		-	-	-	TI-PMW122-24-04-TO
M20x1.5		-	-	-	TI-PMW122-20-06-TO
M18x1.5	3/8	TI-PMZ111-18-06-TO	-	TI-PMW121-18-06-TO	-
M22x1.5		-	TI-PMZ112-22-06-TO	-	TI-PMW122-22-06-TO

TI-P (700, 800 bar)		NPTF (NPSM) thread, 60° cone		NPT thread	JIC, UNF thread, 74° cone
thread size [inch]	hose I.D. [inch]	AGN	DKN		DKJ
					
		code	code	code	code
1/4-18	1/4	TI-PNZ110-04-04-TO	TI-PNW110-04-04-TO	TI-PNWS110-04-04-TO	-
3/8-18		TI-PNZ110-06-04-TO	-	TI-PNWS110-06-04-TO	-
7/16-20		-	-	-	TI-PJW110-07-04-TO
1/2-20		-	-	-	TI-PJW110-08-04-TO
9/16-18		-	-	-	TI-PJW110-09-04-TO
3/8-18	3/8	TI-PNZ110-06-06-TO	-	-	-
9/16-18		-	-	-	TI-PJW110-09-06-TO
3/4-16		-	-	-	TI-PJW110-12-06-TO

# HIGH PRESSURE - UHP equipment

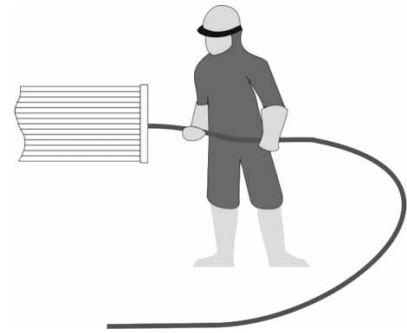
## SPIR STAR®

The internal layer of SPIR STAR® hoses is made of the highest quality thermoplastic materials such as polyoxymethylene (POM), polyamide (PA), polyvinylidene fluoride (PVDF), polytetrafluoroethylene - teflon (PTFE). There are up to 8 layers of high-tensile spring wire made of carbon or stainless steel (also acid resistant steel) spirally wrapped around the internal core.

The external layer is made of polyurethane, different kinds of polyamide or of PVDF depending on application.

Unique combination of the properties of materials that SPIR STAR® hoses are made of, allowed to obtain superior hose characteristics which outperform standard hoses:

- Ultrahigh pressure - up to 4000 bar for UHP type.
- Low volumetric expansion rate when under pressure - quick response of an executive part to a feed impulse.
- Smooth internal layer minimizes pressure drop.
- Reinforced with steel wire layers, which prevent kinking when the hose is bent and ensure long operation life in the most demanding applications.
- External layer resistant to wear and damage.
- Long lengths available - up to 4500 m.
- Small outside diameter - good proportion of size to high pressure operation capability - important when cleaning hard-to-reach places.
- Tailor-made assemblies are also available: twin hoses, bundles and other special-purpose systems.
- Excellent flow rate.
- Very good chemical resistance to detergents, chemicals and solvents.
- Low weight.
- Resistance to external pressure.
- Resistance to ultraviolet radiation, ozone and ageing.
- High stability in high temperatures (for HT series).
- Resistance to seawater.
- High resistance to impulse operation.
- Low medium permeability factor.



### The main areas of SPIR STAR® application:

#### Waterblast technology

The main fields of application: hydro demolition and treatment of concrete, sewage system cleaning, water jet cutting, pipeline and heat exchanger cleaning, surface preparation - surface cleaning and degreasing with a pure medium (water) or medium with solids and abrasives added. A wide range of hose types combined with fittings of special structure e.g. Blast Pro type, allows to satisfy any application need.

#### High pressure hydraulics

SPIR STAR® hoses are widely applied wherever maximum flexibility and resistance to external damage are required. SPIR STAR® hoses are about 50% lighter than similar rubber hoses. Examples of application: hardening of metal surface with high pressure (autofrettage), hydroforming, lifesaving equipment and bolt tensioning.

#### Oil and gas mining industry - oil rigs

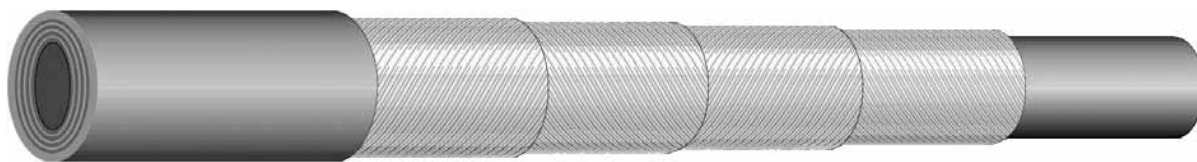
Confirmed applications in offshore projects on rigs of the North Sea and Gulf of Mexico. The main areas of application: hose bundles, methanol service, chemical injection, hydraulics and oilfield well hydraulic control. Other advantages of SPIR STAR hoses vital for this branch of industry: availability of long lengths up to 4500 m in one piece, resistance to external pressure and high temperature up to 150°C for some types of hoses.

#### Other branches of industry

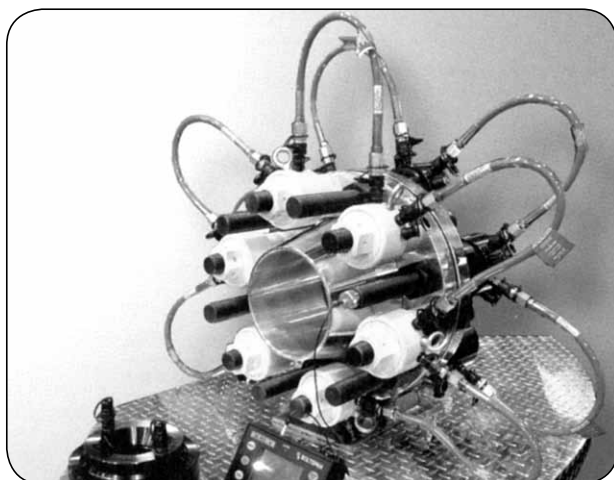
Aircraft, military, chemical, automotive and shipbuilding industry, railway, local government, road infrastructure.

## HIGH PRESSURE - UHP equipment

### SPIR STAR® hoses



inside diameter [mm]	5/4HT
number of steel wire braids	
<b>DC1</b> double external layer PA/PUR <b>H</b> - reinforced version with higher working pressure for application in extreme temperatures, high chemical resistance <b>HT</b> <b>K</b> additional braid in external layer <b>M</b> - internal layer of PA11 for methanol <b>OK</b> - additional external braid of stainless steel <b>PPA</b> - inner layer PVDF / external layer polyamide <b>R</b> - reinforced thicker external layer <b>W</b> - two extra layers of special spiral braid <b>WL</b> - W version, increased flexibility	



# HIGH PRESSURE - UHP equipment

## SPIR STAR® hoses

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	fitting I.D. [mm]	ferrule O.D. [mm]
2 type	Lightweight, flexible, 2 braids hose used mainly to clean heat exchangers, pipe assemblies and pipe systems and in hydraulic applications. Internal layer: POM (polyoxymethylene), from 10 mm PA (polyamide), external layer: PA (polyamide).							
SS-NW-03-2	3.4	6.9	1000	2500	60	0.07	2	8.9
SS-NW-03-2-1100*	3.4	7	1100	2750	60	0.07	2	8.9
SS-NW-04-2	4	8	1200	3000	75	0.11	2.5	10
SS-NW-04-2H-1400*	4	8.1	1400	3500	75	0.11	2.5	10
SS-NW-05-2	5	9.4	1040	2600	95	0.13	3	12.9
SS-NW-05-2H-1400*	4.9	9.5	1400	3500	95	0.15	3	12.9
SS-NW-06-2	6.3	11.5	1000	2500	110	0.18	4	13.9
SS-NW-06-2-1100*	6.3	11.6	1100	2750	110	0.18	4	13.9
SS-NW-08-2	8.1	13.3	900	2250	130	0.20	5.5	17.8
SS-NW-08-2PA	8.1	13.3	840	2100	130	0.20	5.5	17.8
SS-NW-10-2	10.1	15.5	690	1725	160	0.28	6.5	20.8
SS-NW-13-2	12.9	19.3	690	1725	200	0.44	8.5	26
SS-NW-20-2	19	26.2	520	1300	240	0.75	13	34.2
SS-NW-25-2	24.8	33.5	440	1100	300	0.95	16.5	40
2K type	More flexible, 2 braids with 1 additional braid hose used mainly in hydraulic applications. Internal layer: PA (polyamide), external layer: PU (polyurethane).							
SS-NW-04-2K	4	9.8	1200	3000	65	0.19	2.5	13.1
SS-NW-06-2K	6.2	12.9	1120	2800	95	0.30	4	14.1
2OK type	Abrasion resistant, 2 braids hose used mainly to clean heat exchangers, pipe assemblies and pipe systems. Internal layer: POM (polyoxymethylene), external layer: PA (polyamide) + stainless steel braid layer							
SS-NW-05-2OK	5	10.8	1040	2600	95	0.22	3.5	13.3
SS-NW-06-2OK	6.2	13.1	1000	2500	110	0.31	4	15
2W type	Robust, flexible, kink resistant hose used mainly for bolt tensioning, for hydraulic torque wrenches, jacks, hydraulic cutters and other tools. Internal layer: PA (polyamide), external layer: PU (polyurethane). * - twin version available (Twin Hose).							
SS-NW-04-2W	4	9.8	1400	3500	65	0.16	2.5	13.1
SS-NW-06-2W	6	12	1280	3200	95	0.23	4	15.4
SS-NW-06-2WL*	5.9	12	1200	3000	80	0.24	4	15.5
SS-NW-08-2W*	8	14.3	1040	2600	110	0.31	5.5	18.3
SS-NW-08-2WL	8	14	1000	2500	100	0.32	5.5	18.3
SS-NW-08-2WR	8	16	1040	2600	110	0.36	4.5	21.3
SS-NW-10-2W	10	17.2	1100	2760	125	0.43	6.5	21.5
SS-NW-13-2W	12.8	20.8	1040	2600	150	0.59	8.5	26.7
SS-NW-13-2WR	12.8	22.2	1040	2600	150	0.59	7.5	27.5
SS-NW-20-2W	18.8	29.5	760	1900	220	1.16	13	36.3
SS-NW-25-2W	25	35.6	640	1600	280	1.49	16.5	44
3 type	Lightweight, flexible, 3 braids hose used mainly to clean heat exchangers, pipe assemblies and pipe systems. Internal layer: POM (polyoxymethylene), external layer: PA (polyamide).							
SS-NW-05-3	5	10.3	1120	2800	95	0.22	3 (3.5)	12.9
SS-NW-06-3	6.1	12.3	1040	2600	110	0.28	4	14.1

\* - complies with EN 1829-2 standard, working temp. from -30°C up to +70°C

# HIGH PRESSURE - UHP equipment

## SPIR STAR® hoses

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	fitting I.D. [mm]	ferrule O.D. [mm]
4 type	Robust, flexible, 4 braids hose used mainly for bolt tensioning, for hydraulic torque wrenches, jacks, hydraulic cutters and other tools, for water jet cutting, pressure testing. Internal layer: POM (polyoxymethylene), from 13 mm PA (polyamide), external layer: PA (polyamide).							
SS-NW-03-4	3.4	8	2000	5000	110	0.14	2	12.1
SS-NW-03-4-2100*	3.4	8.1	2100	5250	110	0.14	2	12.1
SS-NW-04-4	4	10.3	2200	5500	130	0.23	1.8	14.7
SS-NW-05-4*	5	11.2	1800	4500	150	0.26	2.5	15
SS-NW-06-4	6.3	12.6	1500	3800	180	0.30	3.5	16.4
SS-NW-06-4-1650*	6.3	12.6	1650	4125	180	0.30	3.5	16.4
SS-NW-08-4	8	14.6	1500	3800	200	0.39	4.5	20.3
SS-NW-10-4	9.9	18.4	1500	3800	200	0.69	5.5	23.1
SS-NW-13-4	12.8	21.4	1300	3250	200	0.80	7.5	27.4
SS-NW-13-4H	12.8	22	1400	3500	200	0.88	7.5	29.5
SS-NW-16-4	16	25.5	1040	2600	250	1.00	10.5	32.7
SS-NW-20-4	18.8	28.8	1040	2600	250	1.35	13	36.9
SS-NW-25-4	24.8	36.3	900	2250	300	1.72	19	45.9
6 type	Robust, flexible, 6 braids hose used mainly for high pressure cleaning, water jet cutting, hydroforming, hydraulics, chemicals injection and high pressure lubrication. Internal layer: POM (polyoxymethylene), from 13 mm PA (polyamide), external layer: PA (polyamide).							
SS-NW-03-6	3	9.1	2800	7000	150	0.23	1.8	15.3
SS-NW-04-6*	4	11.5	2800	7000	175	0.37	1.8	17.1
SS-NW-05-6*	4.8	13.2	2500	6250	200	0.45	2.5	17.8
SS-NW-05-6H	4.6	14.4	2800	7000	220	0.56	2.5	19.7
SS-NW-06-6H	5.9	16.4	2800	7000	250	0.75	3	21.4
SS-NW-08-6	8	16.4	2100	5250	250	0.64	4.5	21.6
SS-NW-08-6H*	7.7	18.8	2500	6250	260	0.93	4.5	22.8
SS-NW-08-6UHP*	7.6	19.3	2800	7000	300	1.06	4.5	23.7
SS-NW-08-6UHP-X*	7.6	19.3	3035	7000	300	1.06	4.5	23.7
SS-NW-10-6	9.8	20.4	1920	4800	250	1.00	5.5	26.6
SS-NW-13-6	12.8	23.4	1800	4500	300	1.16	7.5	30.1
SS-NW-13-6H	12.7	24.8	2000	5000	300	1.20	7.5	32.9
SS-NW-16-6	15.9	27.7	1520	3800	320	1.48	10.5	35
SS-NW-20-6	18.8	32.8	1400	3500	350	2.17	13	37.2
SS-NW-25-6	24.8	39.8	1400	3000	600	2.80	17.5	49
8 type	Most robust, flexible, 8 braids hose used mainly for water jet cutting, hydroforming and laboratory applications. Internal layer: POM (polyoxymethylene), external layer: PA (polyamide).							
SS-NW-04-8	4	12.8	3200	8000	175	0.54	1.8	19.5
SS-NW-05UHP	4.5	15.3	3200	8000	250	0.69	2.5	19.7
SS-NW-06UHP	5.8	18.6	3200	8000	280	1.06	3	23.7
SS-NW-08UHP	7.6	22	3200	7400	300	1.50	4.5	29.7
SS-NW-13UHP	12.8	27.7	2800	6000	350	2.09	7.5	31.6
SS-NW-16UHP	15.9	31.8	2000	5000	400	2.52	10.5	35
HDC1 type	Hose designed for surface preparation, ship hull cleaning and hydro demolition of concrete. Internal layer: POM (polyoxymethylene), external layer: PA (polyamide) + PUR (polyurethane).							
SS-NW-05-6HDC1	4.6	18.4	2800	7000	220	0.69	2.5	17.9
SS-NW-08-6HDC1*	7.7	22.8	2500	6250	260	1.09	4.5	22.8

\* - complies with EN 1829-2 standard, working temp. from -30°C up to +70°C

# HIGH PRESSURE - UHP equipment

## SPIR STAR® hoses

code	I.D. [mm]	O.D. [mm]	working pressure* [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	fitting I.D. [mm]	ferrule O.D. [mm]
HT type	Hose intended for hot chemicals injection. Working temperature up to +150°C. Internal and external layer: PVDF (polyvinylidene fluoride).							
SS-HT-05-4HT	5	11.2	1035	4140	250	0.28	2.5	15.4
SS-HT-06-2WHT	6.3	12.2	690	2760	150	0.27	3.5	17.5
SS-HT-06-4HT	6.3	12.6	1035	4140	280	0.32	3.5	17.5
SS-HT-08-2WHT	8	14.5	690	2760	250	0.40	4	20.7
SS-HT-08-4HT	8	14.6	1035	4140	300	0.41	4.5	20.2
SS-HT-10-4HT	9.9	18.4	1035	4140	300	0.70	5	24.9
SS-HT-13-4HHT	12.8	22	860	3450	300	1.00	7.5	29.5
M type	Hose intended for methanol injection. Internal layer: PA11 polyamide (BESNO P40 TLO), external layer: PA (polyamide).							
SS-M-06-2WM	6	12.2	1100	2760	95	0.24	4	16.8
SS-M-06-4WM	6	13	1035	4140	180	0.34	3	19.9
SS-M-08-2WM	8	14.3	1100	2760	110	0.31	5.5	19.7
SS-M-10-2WM	10	17.2	1100	2760	125	0.47	5	21.5
SS-M-13-2WM	12.7	20.8	1100	2760	150	0.63	8.5	27.8
SS-M-25-2KM	23.6	32.6	500	1250	280	1.20	16.5	42
PPA type	Hose designed specifically for oil rig applications. Internal layer: PVDF (polyvinylidene fluoride), external layer: PA (polyamide).							
SS-PPA-05-4PPA	5	11.2	1285	4140	250	0.26	2.5	15
SS-PPA-06-2WPPA	6.3	12.2	915	2760	150	0.27	3.5	17.1
SS-PPA-06-4PPA	6.3	12.6	1180	4140	280	0.31	3.5	17.5
SS-PPA-08-2WPPA	8	14.5	790	2760	250	0.36	5.5	18.3
SS-PPA-08-4PPA	8	14.7	1085	4140	300	0.42	4.5	20.3
SS-PPA-10-4PPA	10	18.4	1180	4140	300	0.68	5.5	23.1
SS-PPA-13-2WPPA	12.8	20.8	790	2760	300	0.67	8.5	27.2
SS-PPA-13-4HPPA	12.8	22	1040	3450	300	1.00	7.5	29.5
SS-PPA-16-4PPA	16	25.5	790	2760	400	1.08	10.5	32.7
SS-PPA-20-4PPA	18.8	28.8	775	2760	500	1.35	13	36.9
SS-PPA-20-6PPA	18.8	32.8	1040	3450	600	2.17	13	43.1
SS-PPA-25-4PPA	24.8	36.3	690	2070	500	1.82	18	42.3

\* Note: Working pressure for HT, M and PPA hoses depends on a safety factor required for a particular application. The higher pressure value indicates the highest possible maximum working pressure regardless of the nature of application.

### Working temperature for SPIR STAR® hoses.

hose type	working temperature	remarks
F	from -70°C up to +200°C	Hose with PTFE internal layer available on request. Working pressure depends on temperature.
HT	from -20°C up to +150°C	For temperatures +80°C and above use 4:1 safety factor to determine the working pressure.
PPA	from -20°C up to +80°C	For temperatures +60 ÷ +80°C use 4:1 safety factor to determine the working pressure.
compliant with EN 1829-2	from -30°C up to +70°C	-
other	from -30°C up to +60°C	-

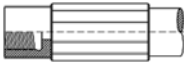
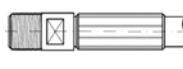
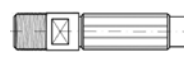
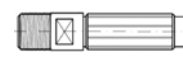
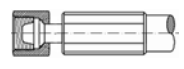
# HIGH PRESSURE - UHP equipment

## SPIR STAR® hoses - VIPER, MAMBA, COBRA type

VIPER, MAMBA and COBRA, a new type of hoses in SPIR-STAR line whose construction ensures high flexibility and tensile strength. Used in UHP hydraulics e.g. in bolt tensioners, jacks, control panels, etc.  
Working temperature from -30°C up to +60°C.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]	fitting I.D. [mm]	ferrule O.D. [mm]
VIPER type	Internal layer: PA (polyamide). Reinforcement layer: multi layers of high- tensile steel wire. External layer: yellow fluorescent PUR (polyurethane).							
SS-HL-VIPER-06	6.1	12.5	700	1800	80	20.60	4	14.4
VIPER Twin type (double)	Internal layer: PA (polyamide). reinforcement layer: multi layers of high- tensile steel wire. External layer: yellow and purple fluorescent PUR (polyurethane).							
SS-HL-VIPER-06T	6.1	12.5	700	1800	80	41.2	4	14.4
MAMBA type	Internal layer: PA (polyamide). Reinforcement layer: multi layers of high- tensile steel wire. External layer: red PUR (polyurethane).							
SS-HL-MAMBA-06	5.9	12	1200	3000	80	23.70	4	15.4
MAMBA Twin type (double)	Internal layer: PA (polyamide). Reinforcement layer: multi layers of high- tensile steel wire. External layer: red and dark grey PUR (polyurethane).							
SS-HL-MAMBA-06T	5.9	12	1200	3000	80	47.40	4	15.4
COBRA type	Internal layer: POM (polyoxymethylene). Reinforcement layer: multi layers of high- tensile steel wire. External layer: dark blue PA (polyamide).							
SS-HL-COBRA-05	5	11.2	1800	4500	150	26.00	2.5	15

### Basic fittings for VIPER, MAMBA, COBRA hoses

fitting					
hose type	NPTF female	NPTF male	BSP male (seal. ring)	BSP male (seal. 100° cone)	BSP female
VIPER VIPER Twin	1/4"-18	1/4"-18 3/8"-18	-	-	-
MAMBA MAMBA Twin	1/4"-18	1/4"-18 3/8"-18	1/4"	1/4"	1/4"
COBRA	-	-	1/4"	1/4"	1/4"



## HIGH PRESSURE - UHP equipment

### SPIR STAR® hose assemblies in 24 h - GREEN LINE



GREEN LINE is a system of fast production of SPIR STAR® hose assemblies, from the selected, most frequently used types of hoses and selected, most popular fittings. The hose assemblies are ready in 24 hours, considering the following conditions:

- a written order must be placed in the sales branch of TUBES INTERNATIONAL® and all technical and sales issues must be agreed upon before 11 a.m. on the day prior to the day when the particular hose assembly is to be ready for collection or dispatch,
- after all necessary agreements are made, the Customer should receive an order confirmation,
- any of the listed fittings can be freely matched with any hose length (allowing for the minimum technically possible length and the maximum available length of the hose),
- the quantity of ordered hose assemblies may be limited,
- the ordered hose assemblies are produced and tested according to the standard SPIR STAR® hose assembly production procedures.

To order your hose assemblies, please fill in the order form below (you can download this form from our website [www.tubes-international.com](http://www.tubes-international.com).)

		<b>SPIR STAR 24H - GREEN LINE - ORDER FORM</b>		
Customer: (company name, NIP, contact person and phone, e-mail):				
				
Left fitting	Hose	Right fitting	Complete length Lc [mm]	Quantity
Medium (substance)	Working pressure [bar]	Working temperature [°C]	Other conditions (external conditions, bending during work etc.)	
Name	Date	Signature	Notes	


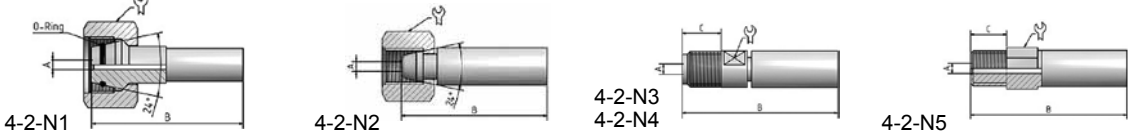
Example:


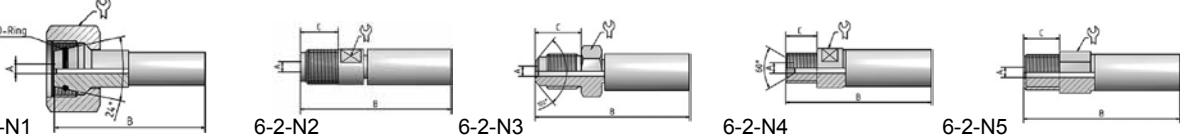
		<b>SPIR STAR 24H - GREEN LINE - ORDER FORM</b>		
Customer: (company name, NIP, contact person and phone, e-mail): Kowalski S.A., NIP 781-00-46-084, Jan Kowalski, tel. 669 111 570, <a href="mailto:kowalski@kowalski-sa.com">kowalski@kowalski-sa.com</a>				
				
Left fitting	Hose	Right fitting	Complete length Lc [mm]	Quantity
4/2-N2	SS-NW-04-2	4/2-N3	6250	2
Medium (substance)	Working pressure [bar]	Working temperature [°C]	Other conditions (external conditions, bending during work etc.)	
water	1000	40	none	
Name	Date	Signature	Notes	
Jan Kowalski	10.05.2016	Kowalski	none	



# HIGH PRESSURE - UHP equipment


## SPIR STAR® hose assemblies in 24 h - GREEN LINE

				<b>SPIR STAR DN4 (4/2)</b> Internal layer: Polyoxymethylene (POM) Reinforcement: Two layers of steel wire External layer: Green polyamide (PA) Working temp.: From -30°C up to +60°C Lightweight, flexible hose used mainly to clean heat exchangers, hose assemblies and piping systems.					
hose code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	ferrule code (carbon steel)	crimped ferrule code [mm]	crimped ferrule length [mm]
SS-NW-04-2	4	8	1200	3000	75	0.11	SS-10420102	10	34
									
fitting type	description		elements	code (carbon steel)	fitting I.D. A [mm]	fitting and ferrule length compl. B [mm]	thread length C [mm]	spanner size D [mm]	
4-2-N1	M24x1.5 female, 24° cone, o ring		insert	SS-20420042A	2.5	68	-	32	
			nut	SS-51321206					
4-2-N2	1/4" BSP female, 24°/60° cone		insert	SS-20430302A	2.5	48	-	19	
			nut	SS-50540301					
4-2-N3	1/8" BSP male, flat seal		-	SS-30420382A	2.5	55	13	9	
4-2-N4	M7x1 male, flat seal		-	SS-30420082A	2.5	52	11	7	
4-2-N5	1/4" BSP male, flat seal		-	SS-30420322A	2.5	55	12	11	

				<b>SPIR STAR DN6 (6/2)</b> Internal layer: Polyoxymethylene (POM) Reinforcement: Two layers of steel wire External layer: Green polyamide (PA) Working temp.: From -30°C up to +60°C Lightweight, flexible hose used mainly for high pressure hydraulics (testing, hydraulic tools) and heat exchanger cleaning.					
hose code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	ferrule code (carbon steel)	crimped ferrule code [mm]	crimped ferrule length [mm]
SS-NW-06-2	6.3	11.5	1000	2500	110	0.18	SS-10620101	13.9	42
									
fitting type	description		elements	code (carbon steel)	fitting I.D. A [mm]	fitting and ferrule length compl. B [mm]	thread length C [mm]	spanner size D [mm]	
6-2-N1	M24x1.5 female, 24° cone, o ring		insert	SS-20620042A	4	75	-	30	
			nut	SS-51060201					
6-2-N2	1/4" BSP male, flat seal		-	SS-30620381A	4	66	15	12	
6-2-N3	1/4" BSP male, 100° outer cone		-	SS-30620361A	4	67	18	17	
6-2-N4	3/8" BSP male, 60° outer cone		-	SS-30620321A	4	61	12	17	
6-2-N5	3/8" NPTF male		-	SS-30620451A	4	64	14	17	

# HIGH PRESSURE - UHP equipment

## SPIR STAR® hose assemblies in 24 h - GREEN LINE


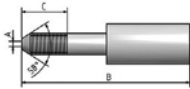


## SPIR STAR DN8 (8/2W)

Internal layer: Polyamide (PA)  
 Reinforcement: Two dense and two open layers of steel wire  
 External layer: Black polyurethane (PUR)  
 Working temp.: From -30°C up to +60°C

Lightweight, flexible hose used mainly for high pressure hydraulics (testing, hydraulic tools) and heat exchanger cleaning.

hose code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	ferrule code (carbon steel)	crimped ferrule code [mm]	crimped ferrule length [mm]
SS-NW-08-2W	8	14.3	1040	2600	110	0.32	SS-10830191W	18.3	43

				<h2>SPIR STAR DN8 UHP (8/6UHP)</h2> <p>Internal layer: Polyoxymethylene (POM) Reinforcement: Six layers of steel wire External layer: Yellow polyamide (PA) Working temp.: From -30°C up to +60°C</p> <p>Robust hose suitable for ultra-high pressure waterjet cleaning and cutting.</p>					
hose code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	ferrule code (carbon steel)	crimped ferrule code [mm]	crimped ferrule length [mm]
SS-NW-08-6UHP	7.6	19.3	2800	7000	300	1.1	SS-10860116	23.7	88
									
8/6UHP-N1, 8/6UHP-N2									
fitting type	description		elements	code (carbon steel)	fitting I.D. A [mm]	fitting and ferrule length compl. B [mm]	thread length C [mm]	spanner size D [mm]	
8/6UHP-N1	HP 9/16"- 18 UNF LH male		-	SS-40860204E	4.5	126	31	-	
8/6UHP-N2	HP M14x1.5 LH male		-	SS-40860104E	4.5	126	31	-	

## HIGH PRESSURE - UHP equipment

### Complete UHP hose assemblies (SPIR STAR®, WATERBLAST) in 24 h

Complete, fully finished and tested UHP (ULTRA HIGH PRESURE) hose assemblies produced from selected SPIR STAR® and WATERBLAST hoses in the most common lengths (Lc) and with selected, most popular fittings. The information on the parameters of these hoses is provided on the previous pages of the catalogue. The hose assemblies are ready in 24 hours, considering the following conditions:

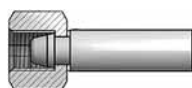
- warehouse availability of the hose assembly must be confirmed;
- a written order must be placed in the sales branch of TUBES INTERNATIONAL® and all technical and sales issues must be agreed upon before 12 a.m. on the day prior to the day when the particular hose assembly is to be ready for collection or dispatch,
- the Customer should receive an order confirmation issued on the basis of the agreements.

hose assembly code	hose type	I.D. [mm]	working pressure [bar]	length complete [m]	fittings			
					left	pic.	right	pic.
hydraulics 700 bar								
HASS-06-001-L1M	SS-HL-VIPER-06	6.1	700	1	3/8" NPT	1	3/8" NPT	1
HASS-06-001-L2M	SS-HL-VIPER-06	6.1	700	2	3/8" NPT	1	3/8" NPT	1
HASS-06-001-L3M	SS-HL-VIPER-06	6.1	700	3	3/8" NPT	1	3/8" NPT	1
HASS-06-001-L5M	SS-HL-VIPER-06	6.1	700	5	3/8" NPT	1	3/8" NPT	1
HASS-06-001-L10M	SS-HL-VIPER-06	6.1	700	10	3/8" NPT	1	3/8" NPT	1
hydraulics 1800 bar								
HASS-05-002-L2M	SS-NW-05-4	5	1800	2	1/4" BSP	2	1/4" BSP	2
HASS-05-002-L3M	SS-NW-05-4	5	1800	3	1/4" BSP	2	1/4" BSP	2
HASS-05-002-L5M	SS-NW-05-4	5	1800	5	1/4" BSP	2	1/4" BSP	2
cleaning 1000 bar								
HAWB-13-001-L20M	SL-WBL4P-13	12.7	1100	20	M24x1.5	4	M24x1.5	4
HASS-08-003-L20M	SS-NW-08-2W	8	1040	20	M24x1.5	4	M24x1.5	4
HASS-03-004-L12M	SS-NW-03-2	3.4	1000	12	1/4" BSP	2	M7x1 flat	5
HASS-04-005-L12M	SS-NW-04-2	4	1200	12	M24x1.5	4	1/8" BSP flat	6
HASS-05-006-L12M	SS-NW-05-2	5	1040	12	M24x1.5	4	1/8" BSP flat	6
HASS-06-007-L12M	SS-NW-06-2	6.3	1000	12	M24x1.5	4	1/4" BSP flat	6
cleaning 2500 bar								
HASS-08-008-L20M	SS-NW-08-6H	7.7	2500	20	9/16"x18 UNF LG	3	9/16"x18 UNF LG	3
HASS-08-009-L20M	SS-NW-08-6H	7.7	2500	20	HPM14x1.5 LH	3	HPM14x1.5 LH	3
HASS-05-010-L5M	SS-NW-05-6	4.8	2500	5	9/16"x18 UNF LG	3	9/16"x18 UNF LG	3
HASS-05-011-L5M	SS-NW-05-6	4.8	2500	5	HPM14x1.5 LH	3	HPM14x1.5 LH	3
cleaning 2800 bar								
HASS-08-012-L20M	SS-NW-08-6UHP	7.6	2800	20	9/16"x18 UNF LG	3	9/16"x18 UNF LG	3
HASS-08-013-L20M	SS-NW-08-6UHP	7.6	2800	20	HPM14x1.5 LH	3	HPM14x1.5 LH	3
HASS-05-014-L5M	SS-NW-05-6H	4.8	2800	5	9/16"x18 UNF LG	3	9/16"x18 UNF LG	3
HASS-05-015-L5M	SS-NW-05-6H	4.8	2800	5	HPM14x1.5 LH	3	HPM14x1.5 LH	3
cleaning 3000 bar								
HASS-08-016-L20M	SS-NW-08-6UHP-X	7.6	3035	20	9/16"x18 UNF LG	3	9/16"x18 UNF LG	3
HASS-08-017-L20M	SS-NW-08-6UHP-X	7.6	3035	20	HPM14x1.5 LH	3	HPM14x1.5 LH	3
HASS-05-018-L5M	SS-NW-05-6UHP	4.5	3200	5	9/16"x18 UNF LG	3	9/16"x18 UNF LG	3
HASS-05-019-L5M	SS-NW-05-6UHP	4.5	3200	5	HPM14x1.5 LH	3	HPM14x1.5 LH	3

#### Fittings



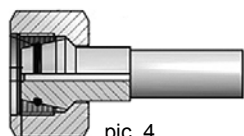
pic. 1



pic. 2



pic. 3



pic. 4



pic. 5



pic. 6

# HIGH PRESSURE - UHP equipment

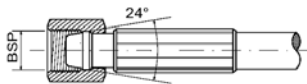
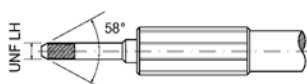
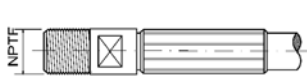
## SPIR STAR® fittings

The most common combinations of fittings and basic types of SPIR STAR® hoses are marked with numerical codes e.g. for hose SS-NW-06-2. They are given in the tables below. The tables facilitate initial fitting selection for a particular hose type. The process of matching the fitting to the particular hose, the choice of sealing and thread size depends not only on the nominal diameter of the hose assembly but also on its maximum working pressure i.e. mainly on the number of reinforcement layers and fitting material. The standard combinations given in the tables below do not apply to special types of hoses - those marked with additional letters in the code of the hose type, e.g. SS-NW-06-2WL.

The final confirmation of availability of hose-fitting connection must be based on the most recent catalogue cards from SPIR STAR® catalogue.

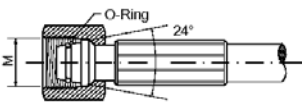
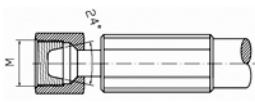
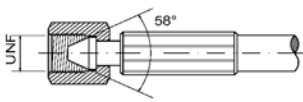
The procedure of initial standard hose assembly selection:

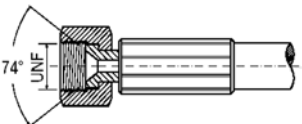


1. The selection of a hose according to such working parameters as medium, temperature, maximum working pressure and required nominal diameter are selected from the tables on SPIR STAR® hoses pages of this catalogue.
2. The selection of fittings from the tables below.
3. The verification of the selection by comparison to SPIR STAR® catalogue data.

fitting																
hose DN	hose type - number of reinf. layers					BSP female	HP male (UNF LH) LH metric thread					NPTF / NPT male				
	2	3	4	6	8											
3	•					1/4"	-					1/16"				
			•			-	1/4"-28					-				
				•		-	1/4"-28, 3/8"-24					-				
4	•					1/4"	1/4"-28					1/16", 1/8", 1/4", 5/16"				
			•			1/4"	1/4"-28, 3/8"-24, 9/16"-18					1/8"				
				•	•	-	1/4"-28, 3/8"-24, 9/16"-18					-				
5	•	•				1/4"	-					1/8", 1/4"				
			•			1/4"	1/4"-28, 3/8"-24, 9/16"-18					-				
				•	•	1/4"	1/4"-28, 3/8"-24, 9/16"-18, M14x1.5					-				
6	•	•				1/4"	9/16"-18					1/8", 1/4", 3/8"				
			•			1/4"	3/8"-24					1/4"				
				•	•	-	3/8"-24, 9/16"-18, M14x1.5					-				
8	•					3/8"	-					1/4", 3/8"				
			•			1/4"	9/16"-18					1/4", 3/8"				
				•	•	-	3/8"-24, 9/16"-18, M14x1.5, 3/4"-16					-				
10	•					1/2"	-					3/8", 1/2"				
			•	•		1/2"	9/16"-18					-				
13	•					1/2"	9/16"-18					1/2"				
			•	•	•	1/2"	9/16"-18, 3/4"-16, M18x1.5					-				
16			•			-	3/4"-16					3/4"				
				•	•	-	M18x1.5					-				
20	•					-	-					1"				
			•	•		-	1"-14					-				
25	•		•			-	-					1"				
				•		-	1"-14					-				

# HIGH PRESSURE - UHP equipment

## SPIR STAR® fittings

fitting								
hose DN	hose type - number of reinf. layers					metric female. O-ring (DKOS *)	metric female (DKL or DKS *)	M type (UNF female) HP female (UNF or LH female)
	2	3	4	6	8			
3			•			-	M12x1.5 (DKL)	9/16"-18
4	•					M24x1.5	-	9/16"-18
			•	•	•	-	-	9/16"-18
5	•	•				M24x1.5	M14x1.5 (DKL)	9/16"-18
			•			M20x1.5	M14x1.5 (DKL)	9/16"-18
				•	•	-	M14x1.5 (DKL)	9/16"-18
6	•	•				M18x1.5, M22x1.5, M24x1.5	M14x1.5 (DKL), M16x1.5 (DKS)	9/16"-18
			•			M18x1.5, M24x1.5	-	3/8"-24, 9/16"-18
				•	•	-	-	9/16"-18
8	•					M20x1.5, M24x1.5	-	3/4"-16
			•			M20x1.5, M22x1.5, M24x1.5	-	3/4"-16
				•	•	M24x1.5	-	3/4"-16, 7/8"-14
10	•					M24x1.5, M22x1.5	-	3/4"-16
			•			M22x1.5, M24x1.5	-	3/4"-16
				•		M22x1.5, M24x1.5	-	-
13	•					M22x1.5, M24x1.5	-	1"-12
			•	•	•	M24x1.5	-	1"-12
16			•	•	•	M30x2	-	1.5/16"-12
20	•		•	•		M36x2	-	1.5/16"-12
25	•			•		M42x2	-	-
			•			M42x2	-	1.5/16"-12




fitting								
hose DN	hose type - number of reinf. layers					JIC female UNF	BSP male	BSP male / metric (flat sealing)
	2	3	4	6	8			
3	●					-	-	M6x1, M7x1
4	●					-	1/8", 1/4"	1/8", M7, M8, M10
5	●	●				-	1/8", 1/4"	1/8", M7, M10
			●			-	1/4"	-
				●	●	9/16"-18	-	-
6	●	●				9/16"-18	1/8", 1/4", 3/8"	1/4"
			●			9/16"-18	1/4"	M8
8	●					9/16"-18	1/4", 3/8"	1/4"
			●			3/4"-16	1/4", 3/8"	1/4"
10	●		●			-	3/8"	-
16			●			1.1/16"-12	-	-
				●	●	1.5/16»-12	-	-
20	●					1.5/16"-12	-	-
25	●					1.5/16»-12	-	-

\* Note: Fittings with metric thread basically correspond to such familiar types as DKOS, DKL and DKS. However, due to dimension differences occurring in certain sizes, it is recommended to confirm the choice with TUBES INTERNATIONAL® Technical Department.

# HIGH PRESSURE - UHP equipment

## Accessories for SPIR STAR® hoses

### Connectors for HP fittings - working pressure 4000 bar

picture	code	thread size	description	intended for
	SS-UHP-CLR-04-HP	1/4"-28 UNF LH fem.	abutment ring	GN-1/4-HP
	SS-UHP-GN-04-HP	9/16"-18 UNF male	nut	CLR-1/4-HP
	SS-UHP-CLR-06-HP	3/8"-24 UNF LH fem.	abutment ring	GN-3/8-HP
	SS-UHP-GN-12-HP	3/4"-16 UNF male	nut	CLR-3/8-HP
	SS-UHP-CLR-09-HP	9/16"-18 UNF LH fem.	abutment ring	GN-9/16-HP
	SS-UHP-GN-18-HP	1.1/8"-12 UNF male	nut	CLR-9/16-HP
	SS-UHP-CLR-04-HP-ME	1/4"-28 UNF LH fem.	abutment ring	GN-M16
	SS-UHP-GN-M16	M16x1.5 male	nut	CLR-1/4-HP-ME
	SS-UHP-CLR-06-HP-ME	3/8"-24 UNF LH fem.	abutment ring	GN-M20
	SS-UHP-GN-M20	M20x1.5 male	nut	CLR-3/8-HP-ME
	SS-UHP-CLR-09-HP-ME	9/16"-18 UNF LH fem.	abutment ring	GN-M30
	SS-UHP-CLR-M14	M14-1.5 LH fem.	abutment ring	GN-M30
	SS-UHP-GN-M30	M30x2 male	nut	CLR-M14. CLR-9/16-HP-ME
	SS-UHP-CLR-M18-M30	M18x1.5 LH fem.	abutment ring	GN-M30-M18
	SS-UHP-GN-M30-M18	M30x2 male	nut	CLR-M18-M30
	SS-UHP-HC-M16	2 x M16x1.5 fem.	straight HP connector (body)	GN-M16 + CLR-1/4-HP-ME
	SS-UHP-HC-M20	2 x M20x1.5 fem.		GN-M20 CLR-3/8-HP-ME
	SS-UHP-HC-M30	2 x M30x2 fem.		GN-M30 + CLR-M14 GN-M30 + CLR-9/16-HP-ME GN-M30-M18 + CLR-M18-M30
	SS-UHP-HC-HF4	HP 1/4"	straight HP connector (complete)	GN-1/4-HP + CLR-1/4-HP
	SS-UHP-HC-HF6	HP 3/8"		GN-3/8-HP + CLR-3/8-HP
	SS-UHP-HC-HF9	HP 9/16"		GN-9/16-HP + CLR-9/16-HP
	SS-UHP-HC-HF9-HF6	HP 9/16" / HP 3/8"	reducing connector HP (complete)	GN-9/16-HP + CLR-9/16-HP + GN-3/8-HP + CLR-3/8-HP

### Other high pressure connectors

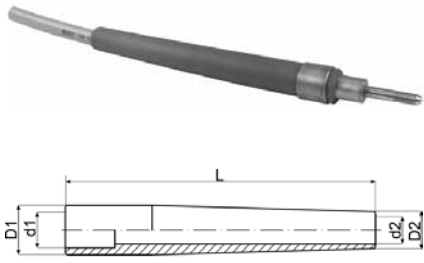
picture	code	pressure [bar]	threads	description	
	TI-HP-0303-04-04	1380	2 x 1/4"	DKR high pressure nipple.	
	SS-UHP-HMB4-MB4	2800			
	TI-HP-0303-06-06	1380	2 x 3/8"		
	SS-UHP-HMB6-MB6	2800			
	TI-HP-0303-08-08	1380	2 x 1/2"		
	SS-UHP-HMB8-MB8	2000			
	SS-UHP-HMB12-MB12	1000	2 x 3/4"	DKOS high pressure nipple.	
	SS-UHP-HMEM18-MEM18	1500	2 x M18x1.5		
	SS-UHP-HMEM20-MEM20	2800	2 x M20x1.5		
	TI-HP-4545-22-22	1380	2 x M22x1.5		
	SS-UHP-HMEM22-MEM22	2800			
	TI-HP-4545-24-24	1380	2 x M24x1.5		
	SS-UHP-HMEM24-MEM24	2800			
	SS-UHP-HMEM30-MEM30	2000	2 x M30x2		
	SS-UHP-HMEM36-MEM36	1400	2 x M36x2		
	SS-UHP-HMEM42-MEM42	2070	2 x M42x2		
	SS-UHP-HMEM42-MEM42-20K	1380	2 x M42x2		
	SS-UHP-HMEM22-MEM24	2800	M22x1.5 / M24x1.5		DKOS high pressure reducing nipple.
	SS-UHP-HMEM24-MEM36	1400	M24x1.5 / M36x2		
	SS-UHP-HMEM30-MEM36	1400	M30x2 / M36x2		
	SS-UHP-HMEM36-MEM42	480	M36x2 / M42x2		

# HIGH PRESSURE - UHP equipment

## Accessories for SPIR STAR® hoses


### Hose bend restrictors (assembled behind sleeve)

Polyurethane restrictors raise working safety level and extend hose service life. They are very lightweight and easy to assemble. Intended for hoses operating under highest pressure (see the table). For hoses with lower working pressure and other applications e.g. for hose 6/2 WL, standard rubber restrictors should be used (see CLEANING AND WASHING - code EM-KK... or EM-GK...). Please contact TUBES INTERNATIONAL® Technical Department to confirm your selection.

picture	code	dimensions [mm]					hose type
		L	D1	d1	D2	d2	
	SS-BR-PUR-01	250	30	18	23	16	5/6
	SS-BR-PUR-02	250	30	19.5	23	16	4/8, 5/6H
	SS-BR-PUR-03	250	30	20.5	23	16	5mmUHP
	SS-BR-PUR-04	250	40	22.5	30	22.5	6/6H, 8/6
	SS-BR-PUR-05	250	40	26.5	30	26.5	6mmUHP, 8/6H, 8/6HDC1, 8/6UHP, 8/6UHP-X
	SS-BR-PUR-06	250	40	30	30	22.5	8mmUHP
	SS-BR-PUR-07	350	50	35.3	40	32	13mmUHP
	SS-BR-PUR-08	350	52	38.3	44	35	16/6, 16mmUHP
	SS-BR-PUR-09	450	55	43.3	45	37	20/6

### Hose securing grips

Steel securing grips used to protect a hose operator against the effects of connection failure e.g. pulling a fitting out from the hose. Very easy to install, even when the systems is on - requires disconnection of the hose from the system only at one side for assembly time. In emergency situation, when the hose-fitting connection breaks or the fitting is pulled out from the installation, the grip shrinks and tightens on the hose so the hose slows down and stops.

picture	code	hose O.D. [mm]	strength [kN]
	SS-CG-01	10 ÷ 15	10.2
	SS-CG-02	15 ÷ 20	20.4
	SS-CG-03	20 ÷ 30	24.3
	SS-CG-04	30 ÷ 40	35.1
	SS-CG-05	40 ÷ 50	48
	SS-CG-06	50 ÷ 60	48

### Protective hose covers

In order to protect the external hose layer, another hose - LUISIANA and CRISTALLO (see "INDUSTRIAL HOSES - food") can be used by sliding the protective hose over the one to be protected. LUISIANA hose cover (reinforced with spiral) secures SPIR STAR® hoses in WATERBLAST applications where high surface friction occurs. CRISTALLO hose cover (without reinforcement) secures high pressure hydraulic hoses in applications where friction is smaller but maximum flexibility is crucial.

Selection of a protective hose cover: the outside diameter of the ferrule of SPIR STAR® hose after crimping must be smaller than the inside diameter of the protective hose.

## HIGH PRESSURE - UHP equipment

### UHP accessories



#### Monro Jet® nozzle

**Material:** Stainless steel  
**Water flow:** From 3 l/min up to 230 l/min  
**Working press.:** From 200 bar up to 2500 bar  
**Working temp.:** Up to +100°C

Monro Jet rotary nozzle enables spreading a high pressure stream of water over a large area. Designed to be assembled on lances and spray guns for ultra-high pressure, operated manually or by robots. Used in construction, rust and scale removal industry, cleaning of castings, drilling rigs, ships and tanks, roads and runways, pipes and hose assemblies, building facades, cutting off roots, removing and cleaning of concrete constructions, removing paint, tar, asphalt and bituminous coverings. Selection made on the basis of pressure and water consumption of supply device. Please contact TUBES INTERNATIONAL® Technical Department to confirm your selection.

type	working press. [bar]	dimensions [mm]		weight [kg]	rotor calibration	connections
		length	width			
F1 (22°)	1500	134.9	49	1.25	0.6 ÷ 2.8	9/16"-18 UNF LH (RH) M14x1.5 LH M24x1.5 RH
F2 (22°)	1000	134.9	49	1.25	0.6 ÷ 2.8	1/4" BSP 3/8" BSP (NPT) 1/2" BSP (NPT)
F3 (22°)	800	134.9	49	0.67	0.6 ÷ 2.8	1/4" BSP 3/8" BSP (NPT) 1/2" BSP (NPT) 9/16"-18 UNF LH (RH) M14x1.5 LH M24x1.5 RH
F4 (22°)	500	109	43	0.64	0.6 ÷ 2.8	1/4" BSP 3/8" BSP (NPT) 1/2" BSP (NPT) 9/16"-18 UNF LH (RH) M14x1.5 LH
F6 (30°)	500	109	43	0.64	0.6 ÷ 1.65	1/4" BSP 3/8" BSP (NPT) 1/2" BSP (NPT) 9/16"-18 UNF LH (RH) M14x1.5 LH
F25 (22°)	2500	134.9	49	1.3	0.4 ÷ 1.2	9/16"-18 UNF LH (RH) M14x1.5 LH
F25BE (22°)	2500	149	49	1.3	0.6 ÷ 1.55	9/16"-18 UNF LH (HD) M14x1.5 LH (HD)

#### Code structure of Monro Jet® nozzle

<b>MV</b>	-	<b>F1</b>	-	<b>080</b>	-	<b>M14L</b>
		nozzle type		calibration		connection code

connection	1/4" BSP	3/8" BSP	3/8" NPT	1/2" BSP	1/2" NPT	M14x1.5 LH	M24x1.5 RH	9/16"-18 UNF LH	9/16"-18 UNF RH
connection code	14B	38B	38N	12B	12N	M14L	M14R	916L	916R



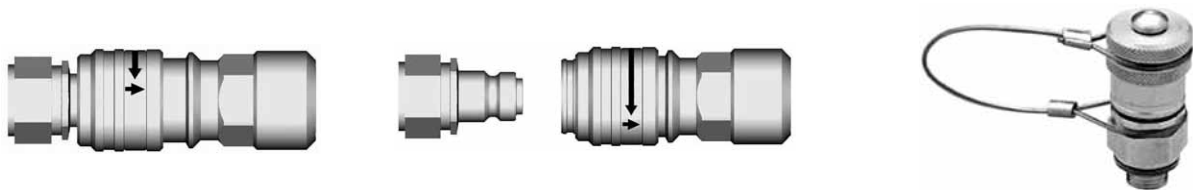
# HIGH PRESSURE - UHP equipment

## Quick release couplings

The series is specially designed for ultra-high pressure. The diversity of this product range enables using the couplings even in the most demanding applications. These couplings are made of hardened steel to ensure longer service life. They are compact and easy to connect. The unique design of these couplings minimizes possible fluid leakage and prevents air inclusion so that it enables keeping the coupling clean. Blank plugs that are provided with the couplings as a standard provide additional protection from dirt. Versions with a safety locking ring preventing accidental disconnection are available on request.

### Flat-Face series

The Flat-Face, dry-brake series has been developed to meet the rigorous demands of ultrahigh pressure hydraulic applications. It is easier to control the cleanliness of a connecting surface as it is flat. Moreover the series is designed for one hand operation. It is enough to push the plug into the socket without any positioning. The plug is automatically locked in the socket. In order to disconnect the socket turn the locking sleeve by 30° and then pull it backwards to release the plug. The unique blank plug design with an integrated pressure eliminator is a solution to a problem of residual pressure that is sometimes present on the plug side, making it difficult to connect with the socket. By pressing the button on the blank plug, the internal pressure can be easily relieved and the plug can be pushed in into the socket without any problems.



### Sealing for threaded connection of a coupling with hose assembly or hydraulic system

type of sealing	application
metal - metal sealing 120° cone	For the pressure of 700 bar and above, the use of 120° cone sealing is recommended. The cone allows to achieve very good sealing properties at low tightening torque so the quick release couplings can be reassembled many times without any risk of damage to the sealing surfaces.
rubber - metal seals	Rubber - metal seals can be used for parallel thread or other components with appropriate sealing surface (flat surface). Rubber - metal seals are not recommended for pressures above 1000 bar.
liquid sealant or paste sealant	It is recommended to use liquid or paste sealant for NPT or BSPT threads. Sealing tape (e.g. PTFE tape) should be avoided as it may damage components during tightening or cause system malfunction if it accidentally enters the hydraulic system.

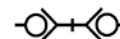
### Proper selection and handling of a quick release coupling

In order to choose a quick release coupling properly for certain application and to be sure that it is going to function faultlessly, we should:

- Account for the working pressure of a quick release coupling, flow rate and pressure drop as well as the type of sealing.
- Consider protection against accidental disconnection.
- Do not connect couplings under pressure.
- Keep the quick release coupling clean (wipe off the surface of the socket and plug before each connection).
- Use blank plugs and caps whenever the socket and plug are separated as they protect the quick release couplings against dirt and debris. It is important to wipe the socket and plug clean each time before putting the blank plugs and caps on. The blank plug and cap should be connected whenever the coupling is connected.
- Check the condition of the plug, socket and sealing on regular basis - replace them, if necessary.

# HIGH PRESSURE - UHP equipment





## Quick release couplings



### CEJN 115 series TEMA 1000 series

**Material:** Hardened, zinc-plated steel  
**Seal:** NBR  
**Flow rate:** 6 l/min. ( $\Delta p = 4$  bar)  
**Nominal diam.:** 2.5 mm  
**Working press.:** 1000 bar (connected coupling)  
**Bursting press.:** 2600 bar (CEJN)  
 3000 bar (TEMA)  
**Working temp.:** From -30°C up to +100°C

Double shut-off hydraulic quick release coupling designed for ultra-high pressure systems. Used in crimping machines, rescue equipment, jacks, cutters, etc. The socket is available with a safety locking ring preventing accidental disconnection as an option. Both sockets and plugs are supplied with blank plugs and caps as a standard.

picture	CEJN code	TEMA code	thread size	sealing	spanner [mm]	L [mm] ( $\pm 2$ mm)	D [mm] ( $\pm 2$ mm)
Socket - female thread 	CJ-HP-101151102	-	1/4" BSPT	-	24	59	28
	CJ-HP-101151104	-	3/8" BSPT	-		61	
	CJ-HP-101151201	-	1/8" BSP (1)	-		54	
	CJ-HP-101151202	TA-H-HP10104131	1/4" BSP	4)		60	
	CJ-HP-101151204	TA-H-HP10104171	3/8" BSP	3)		61	
	CJ-HP-101151222*	TA-H-HP10104132*	1/4" BSP	4)		60	
	-	TA-H-HP10104172*	3/8" BSP	3)		59	27
	CJ-HP-101151401	-	1/8" NPT	-		54	28
	CJ-HP-101151402	TA-H-HP10105131	1/4" NPT(F)	-		59	
	CJ-HP-101151404	TA-H-HP10105171	3/8" NPT(F)	-		60	
	CJ-HP-101151422*	TA-H-HP10105132*	1/4" NPT(F)	-		59	
	-	TA-H-HP10105172*	3/8" NPT(F)	-		59	27
Socket - male thread 	CJ-HP-101151252	-	1/4" BSP	2)	24	61	28
	CJ-HP-101151254	-	3/8" BSP	3)		61	
	CJ-HP-101151452	-	1/4" NPT	-		62	
	CJ-HP-101151454	-	3/8" NPT	-		62	
Plug - female thread 	CJ-HP-101156102	-	1/4" BSPT	-	22	37	25
	CJ-HP-101156104	-	3/8" BSPT	-	24	38	28
	CJ-HP-101156201	-	1/8" BSP	1)	17	33	20
	CJ-HP-101156202	TA-H-HP1020413	1/4" BSP	4)	22	38	26
	CJ-HP-101156204	TA-H-HP1020417	3/8" BSP	3)	24	38	26
	CJ-HP-101156401	-	1/8" NPT	-	17	33	20
	CJ-HP-101156402	TA-H-HP1020513	1/4" NPT(F)	-	22	36	26
	CJ-HP-101156404	TA-H-HP1020517	3/8" NPT(F)	-	24	37	26
Plug - male thread 	CJ-HP-101156152	-	1/4" BSPT	-	22	63	26
	CJ-HP-101156154	-	3/8" BSPT	-		63	
	CJ-HP-101156212	-	1/4" BSP	2)		50	
	CJ-HP-101156272**	-	1/4" BSP	2)		52	
	CJ-HP-101156452	-	1/4" NPT	-		62	
	CJ-HP-101156454	-	3/8" NPT	-		62	

\*) with safety locking ring

\*\*) with safety valve

1) metal-rubber seal CJ-HP-199500061

2) metal-rubber seal CJ-HP-199500062

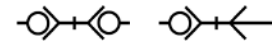
3) metal-rubber seal CJ-HP-199500064

4) cone 120°

CEJN code	TEMA code	description	colour
CJ-HP-091151005	TA-H-HP16	socket blank plug PVC	blue
CJ-HP-091151057	TA-H-HP26	plug blank cap PVC	
CJ-HP-091151004	-	socket blank plug PVC	black
CJ-HP-091151055	-	plug blank cap PVC	
CJ-HP-091151002	-	socket blank plug PVC	red
CJ-HP-091151053	-	plug blank cap PVC	

# HIGH PRESSURE - UHP equipment




## Quick release couplings



### CEJN 116 series TEMA 1500 series

**Material:** Hardened, zinc-plated steel  
**Seal:** NBR  
**Flow rate:** 6 l/min. ( $\Delta p = 4$  bar)  
**Nominal diam.:** 2.5 mm  
**Working press.:** 1500 bar (connected coupling)  
**Bursting press.:** 3000 bar (CEJN)  
 3500 bar (TEMA)  
**Working temp.:** From -30°C up to +100°C

Double shut-off hydraulic quick release coupling designed for ultra-high pressure systems. Used in crimping machines, rescue equipment, jacks, cutters, etc. The socket is available with a safety locking ring preventing accidental disconnection as an option. Both socket and plugs are supplied with blank plugs and caps as a standard.

picture	CEJN code	TEMA code	thread size	sealing	spanner [mm]	L [mm] ( $\pm 2$ mm)	D [mm] ( $\pm 2$ mm)
	CJ-HP-101161201	-	1/8" BSP	1)	24	54	28
	CJ-HP-101161202	TA-H-HP15104131	1/4" BSP	5)		60	
	CJ-HP-101161222 a)	TA-H-HP15104132 a)	1/4" BSP	5)		60	
	CJ-HP-101161230 c)	-	1/4" BSP	2)	28	67	35
	CJ-HP-101161246 a) b)	-	1/4" BSP	2)	24	61	28
	CJ-HP-101161250 c), f)	-	1/4" BSP	5)	22	66	
	CJ-HP-101161280 b)	-	1/4" BSP	5)	24	61	
	CJ-HP-101161402	TA-H-HP15105131	1/4" NPT(F)	-		59	
	CJ-HP-101161422 a)	TA-H-HP15105132 a)	1/4" NPT(F)	-			
	CJ-HP-101166201	-	1/8" BSP	1)	17	33	20
	CJ-HP-101166202	TA-H-HP1520413	1/4" BSP	5)	22	38	25
	CJ-HP-101166241 d)	-	1/4" BSP	5)			
	CJ-HP-101166402	TA-H-HP1520513	1/4" NPT(F)	-		37	
	CJ-HP-101165252 e)	-	1/4" BSP	4)	22	41	25

- a) with safety locking ring
- b) made of stainless steel
- c) with angular connection
- d) valve made of stainless steel
- e) plug without valve
- f) 360° rotation

- 1) metal-rubber seal CJ-HP-199500061
- 2) metal-rubber seal CJ-HP-199500083
- 4) copper washer CJ-HP-099504600
- 5) 120° cone seal

CEJN code	TEMA code	description	colour
CJ-HP-091151005	TA-H-HP16	socket blank plug PVC	blue
CJ-HP-091151057	TA-H-HP26	plug blank cap PVC	
CJ-HP-091151004	-	socket blank plug PVC	black
CJ-HP-091151055	-	plug blank cap PVC	
CJ-HP-091151002	-	socket blank plug PVC	red
CJ-HP-091151053	-	plug blank cap PVC	

## HIGH PRESSURE - UHP equipment

### Quick release couplings



#### CEJN 116 series - adapters

**Material:** Hardened zinc-plated steel  
**Seal:** NBR  
**Flow rate:** 6 l/min. ( $\Delta p = 4$  bar)  
**DN:** 2.5 mm  
**Working press.:** 1500 bar  
**Working temp.:** From -30°C up to +100°C

Hydraulic adapters intended for ultra-high pressure installations. 116 series quick release coupling is designed to be the core of the construction. Particularly recommended for bolt tensioners, actuators and other applications that require connection of several hose assemblies simultaneously. The application of adapters reduces the risk of leakage and facilitates installation, compared to standard solutions (a combination of porting blocks, washers, threaded adapters and quick release couplings). Safety factor 2:1.

picture	code	L [mm]	D [mm]	picture	code	L [mm]	D [mm]
	CJ-HP-101163166	103	62		CJ-HP-101163111	149	89
	CJ-HP-101163116	121	89		CJ-HP-101163616	94	89
	CJ-HP-101163161	149	62		CJ-HP-101163666	94	62



#### CEJN 115 FF series

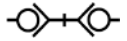
**Material:** Hardened zinc-plated steel, aluminium  
**Seal:** NBR  
**Flow rate:** 5.3 l/min. ( $\Delta p = 4$  bar)  
**Working press.:** 800 bar (connected coupling)  
**Bursting press.:** 2800 bar  
**Working temp.:** From -30°C up to +100°C

Double shut-off hydraulic quick release coupling designed for ultra-high pressure systems. For one hand operation. The unique flat surface face between socket and plug ensures dry-brake disconnection and prevents air inclusion. Lightweight design makes it a perfect choice for applications where weight is of highest importance. Highly recommended for rescue equipment, hydraulic tools and testing equipment. The 115 FF type socket can be connected to the standard 115 series type plug.

picture	code	DN [mm]	thread size	thread seal	spanner [mm]	L [mm]	D [mm]	weight [g]
Socket - female thread 	CJ-HP-1011151200	2.5	1/4" BSP	rubber-metal seal	24	70.1	30	170

# HIGH PRESSURE - UHP equipment




## Quick release couplings



### CEJN 115 FF series - high flow

**Material:** Hardened zinc-plated steel  
**Seal:** NBR  
**Flow rate:** 11 l/min. ( $\Delta p = 4$  bar)  
**Working press.:** 800 bar  
**Bursting press.:** 2400 bar  
**Working temp.:** From -30°C up to +100°C

Double shut-off, hydraulic quick release coupling designed for ultra-high pressure systems. Designed for one hand operation. The unique flat surface of a face between a socket and a plug ensures dry-brake disconnection and prevents air inclusion. Highly recommended for hydraulic tools demanding high flow rates. supplied with dust caps as a standard.



picture	code	DN [mm]	thread size	thread seal	spanner [mm]	L [mm]	D [mm]
	CJ-HP-101152202	4	BSP 1/4"	120° cone	24	75.8	30
	CJ-HP-101152402		NPT 1/4"	-		72.8	
	CJ-HP-101152452		NPT 1/4"	-		74.3	
	CJ-HP-101157002		BSP 1/4"	120° cone	22	38	24.7
	CJ-HP-101157402		NPT 1/4"	-		35.7	



### CEJN 116 FF series

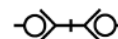
**Material:** Hardened zinc-plated steel  
**Seal:** NBR  
**Flow rate:** 5.3 l/min. ( $\Delta p = 4$  bar)  
**Working press.:** 1500 bar - 1/4", 1000 bar - 3/8" (connected coupling)  
**Bursting press.:** 3000 bar  
**Working temp.:** From -30°C up to +100°C

Double shut-off hydraulic quick release coupling designed for ultra-high pressure systems. For one hand operation. The unique flat surface face between socket and plug ensures dry-brake disconnection and prevents air inclusion. Widely used in cylinders, hydraulic tools and testing equipment. The 116 FF type socket can be connected to the standard 116 series type plug.

picture	code	DN [mm]	thread size	thread seal	spanner [mm]	L [mm]	D [mm]	weight [g]
	CJ-HP-101161219	2.5	1/4" BSP	120° cone	24	72.1	30	215
	CJ-HP-101161229		3/8" BSP	rubber metal seal		72.6		225
	CJ-HP-101161419		1/4" NPT	-		69.1		225
	CJ-HP-101161429		3/8" NPT	-		70.6		220
	CJ-HP-101161269		1/4" BSP	rubber metal seal	24	70.6	30	205
	CJ-HP-101161279		3/8" BSP	rubber metal seal				210
	CJ-HP-101161469		1/4" NPT	-				200
	CJ-HP-101161479		3/8" NPT	-				210

## HIGH PRESSURE - UHP equipment




### Quick release couplings



#### CEJN 117 series

**Material:** Hardened zinc-plated steel  
**Seal:** NBR  
**Flow rate:** 6 l/min. ( $\Delta p = 4$  bar)  
**Working press.:** 1000 bar (connected coupling)  
**Bursting press.:** 2600 bar  
**Working temp.:** From -30°C up to +100°C

Double shut-off hydraulic quick release coupling designed for ultra-high pressure systems. Although the 117 series is a sister coupling to 115 series and has the same working parameters, they are not compatible. The two series are widely used in rescue tools. CEJN 117 couplings are supplied with plastic blank plugs and caps as a standard.



picture	code	DN [mm]	thread size	thread seal	spanner [mm]	L [mm]	D [mm]	weight [g]
Coupling - female thread 	CJ-HP-101171202	2.5	1/4" BSP	120° cone	24	61.3	28	165
	CJ-HP-101171232*		1/4" BSP	120° cone		61.3		170
	CJ-HP-101171404		3/8" NPT	-		60.3		165
	CJ-HP-101171434*		3/8" NPT	-		60.3		170
Coupling - male thread 	CJ-HP-101171254		3/8" BSP	rubber metal seal	24	60.8	28	155
	CJ-HP-101171454		3/8" NPT	-		62.3		
Plug - female thread 	CJ-HP-101176202		1/4" BSP	120° cone	22	38	25.4	60
	CJ-HP-101176404		3/8" NPT	-	24	37	27.7	65



#### CEJN 218 series

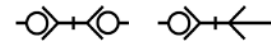
**Material:** Hardened zinc-plated steel  
**Seal:** NBR  
**Flow rate:** 15 l/min. ( $\Delta p = 4$  bar)  
**Working press.:** 1000 bar (connected coupling)  
**Bursting press.:** 2800 bar  
**Working temp.:** From -30°C up to +100°C

Double shut-off hydraulic quick release coupling designed for ultra-high pressure systems. The socket equipped with a safety locking ring preventing accidental disconnection. Developed for application where high flow rates are required. CEJN 218 couplings are supplied with plastic plugs and caps as a standard.

picture	code	DN [mm]	thread size	thread seal	spanner [mm]	L [mm]	D [mm]	weight [g]
Coupling - female thread 	CJ-HP-102181234	4.5	3/8" BSP	rubber metal seal	30	73.4	34.6	340
	CJ-HP-102181434		3/8" NPT	-				330
Plug - female thread 	CJ-HP-102186204		3/8" BSP	rubber metal seal	24	50.5	27.7	115
	CJ-HP-102186404		3/8" NPT	-		49		110

# HIGH PRESSURE - UHP equipment




## Quick release couplings



### CEJN 125 series

**Material:** Hardened zinc-plated steel  
**Seal:** NBR  
**Flow rate:** 5.8 l/min. ( $\Delta p = 4$  bar)  
**Working press.:** 2500 bar (connected coupling)  
**Bursting press.:** 5000 bar  
**Working temp.:** From -30°C up to +100°C

Hydraulic quick release coupling designed for ultra-high pressure systems. Available as a double or single shut-off version (there is no valve in the plug with male thread). Widely used for bolt tensioners, bearing pullers, etc. Supplied with plastic blank plugs and caps as a standard.



picture	code	DN [mm]	thread size	thread seal	spanner [mm]	L [mm]	D [mm]	weight [g]
Socket - female thread 	CJ-HP-101251203	2.5	1/4" BSP	120° cone	24	64.3	30	210
Plug - female thread 	CJ-HP-101256203		1/4" BSP	120° cone	22	38	25.4	60
Plug - female (without valve) 	CJ-HP-101255252		1/4" BSP	cooper washer	22	42.5	25.4	65



### CEJN 135 series

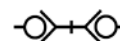
**Material:** Hardened zinc-plated steel  
**Seal:** NBR  
**Flow rate:** 4.6 l/min. ( $\Delta p = 4$  bar)  
**Working press.:** 3000 bar (disconnected or connected)  
**Bursting press.:** 6000 bar  
**Working temp.:** From -20°C up to +80°C

Double shut-off hydraulic quick release coupling for ultra-high pressure systems. The socket equipped with a safety locking ring preventing accidental disconnection. Widely used in hydraulic tools and testing equipment. The series enables connection even under high pressure. CEJN 135 couplings are supplied with blank plugs and caps as a standard. Swiveling of the plug in the socket can cause its wear and damage that is why quick release couplings with standard (swiveling) plugs (CJ-101351505) can only be exposed to 1000 cycles up to the maximum working pressure, whereas the couplings with non-swivel plugs (CJ-101356506) - 5000 cycles.

picture	code	DN [mm]	thread size	thread seal	spanner [mm]	L [mm]	D [mm]	weight [g]
Socket - female thread 	CJ-HP-101351505	2.5	M16x1.5	60° cone	22	64	30	210
Plug - female thread 	CJ-HP-101356505		M16x1.5	60° cone	22	55.3	25	125
	CJ-HP-101356506		M16x1.5	60° cone	22	55.3	25	125

## HIGH PRESSURE - UHP equipment

### Quick release couplings



### CEJN 230 series DNP PVS series HQ HPA series

**Material:** Galvanized steel  
**Seal:** NBR  
**Flow rate:** 1/4" - 16.4 l/min; ( $\Delta p = 4$  bar)  
                   3/8" - 21.3 l/min; ( $\Delta p = 4$  bar)  
**Working press.:** 700 bar  
**Bursting press.:** 1/4" - 2100 bar (connected coupling)  
                           3/8" - 1850 bar (connected coupling)  
                           1/4" - 1800 bar (disconnected socket)  
                           3/8" - 1850 bar (disconnected socket)  
                           1/4" - 1490 bar (disconnected plug)  
                           3/8" - 1500 bar (disconnected plug)  
**Working temp.:** From -25°C up to +100°C

Double shut-off, screw-to-connect, hydraulic quick release couplings designed for ultra-high pressure installations exposed to high mechanical loads. Widely used in hydraulic presses, rescue equipment, jacks, cutters, etc. Couplings can be connected/disconnected with residual pressure in the system. Steel or aluminium dust caps must be ordered separately.

picture	CEJN	DNP	HQ	size [inch]	thread size
	CJ-HP-102301452	DP-PVS3-0606022	HQ-HPA06-F-04NM	1/4	1/4" NPT male
	CJ-HP-102301484	DP-PVS3-1010022	HQ-HPA10-F-06NM	3/8	3/8" NPT male
	CJ-HP-102306402	DP-PVS1-0606013	HQ-HPA06-M-04N	1/4	1/4" NPT female
	CJ-HP-102306434	DP-PVS1-1010013	HQ-HPA10-M-06N	3/8	3/8" NPT female

CEJN	DNP	HQ	description	material	
				CEJN, HQ	DNP
CJ-HP-102304101	DP-SPVS-06102	HQ-HPA06-F-PLUG	1/4" socket cap	galvanized steel	aluminium
CJ-HP-102304103	DP-SPVS-10102C	HQ-HPA10-F-PLUG	3/8" socket cap		
CJ-HP-102304100	DP-SPVS-06103	HQ-HPA06-M-CAP	1/4" plug cap		
CJ-HP-102304102	DP-SPVS-10103C	HQ-HPA10-M-CAP	3/8" plug cap		

picture	code	size [inch]	working pressure [bar]	description
	CJ-HP-199500061	1/8	1000	1) rubber-metal seal
	CJ-HP-199500062	1/4		
	CJ-HP-199500064	3/8		
	CJ-HP-199500083	1/4	1500	2) rubber-metal seal
	CJ-HP-099504600	1/4	2000	3) copper washer

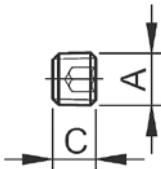
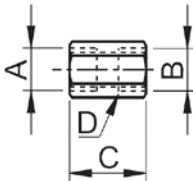
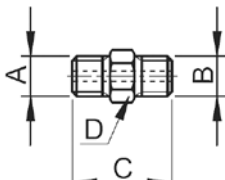
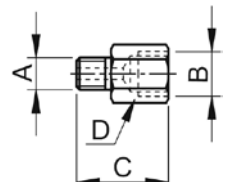
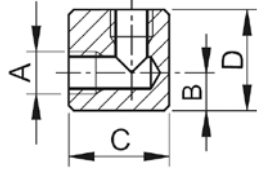
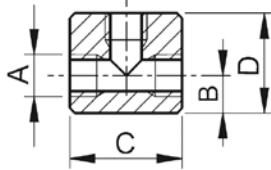
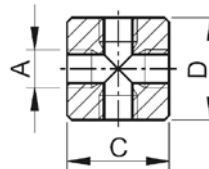


# HIGH PRESSURE - UHP equipment

## Connectors

Adapters intended to connect quick release couplings with UHP hoses and to connect to UHP porting blocks. Made of black zinc-plated steel.

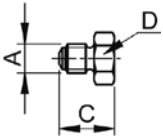
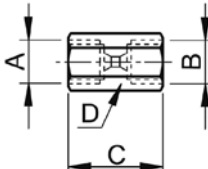
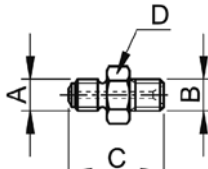
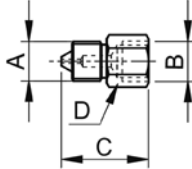
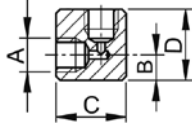
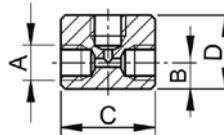
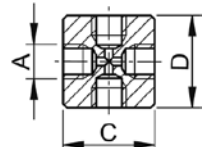
Working pressure: 700 bar at safety factor 4:1, 1000 bar at safety factor 2.8:1.

picture	code	description	dimensions				
			A	B	C	D	
	EU-RC14	dust plug	1/4" NPT	-	10.5	-	
	EU-RC38		3/8" NPT	-		-	
	EU-RS14	straight connector with female thread	1/4" NPT	1/4" NPT	32	19	
	EU-RS38		3/8" NPT	3/8" NPT	34	24	
	EU-RS52		1/4" NPT				
	EU-RN14	straight connector with male thread	1/4" NPT	1/4" NPT	39	17	
	EU-RN38		3/8" NPT	3/8" NPT	41		
	EU-RN381				70		
	EU-RN382				120		
	EU-RN52			1/4" NPT	41		
	EU-RR23	straight connector with male/female thread	1/4" BSP 120°	3/8" NPT	41	24	
	EU-RR24		1/4" NPT		40		
	EU-RR52		3/8" NPT	1/4" NPT	40	19	
	EU-RR02		1/2" BSP			22	
	EU-RR26		1/4" NPT	1/2" BSP		30	
	EU-RR501		3/8" NPT				
	EU-RE14	elbow connector	1/4" NPT	15	35	35	
	EU-RE38		3/8" NPT	15	40	40	
	EU-RT14	tee connector	1/4" NPT	12.5	40	35	
	EU-RT38		3/8" NPT	15	45	40	
	EU-RX14	cross connector	1/4" NPT	-	45	45	
	EU-RX38		3/8" NPT	-			

# HIGH PRESSURE - UHP equipment

## Connectors

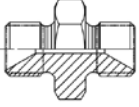
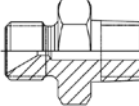
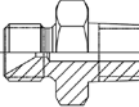
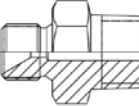
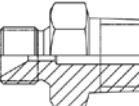
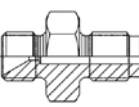
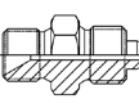
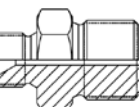
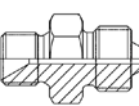
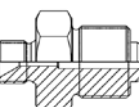
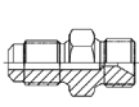
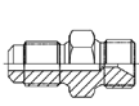
Adapters intended to connect quick release couplings with UHP hoses and to connect to UHP porting blocks. Made of black zinc-plated steel.

picture	code	description	dimensions				press. [bar]
			A	B	C	D	
	EU-RC15	dust plug	1/4" BSP 120°	-	28	22	2000
	EU-RC34		3/4"-16 UNF 60°	-	32	22	3000
	EU-RS15	straight connector with female thread	1/4" BSP 120°	1/4" BSP 120°	40	19	2000
	EU-RS34		3/4"-16 UNF 60°	3/4"-16 UNF 60°	42	27	3000
	EU-RN15	straight connector with male thread	1/4" BSP 120°	1/4" BSP 120°	46	22	2000
	EU-RN29			1/4" NPT	43		
	EU-RN53			3/8" NPT	45		
	EU-RN17		1/4" BSP 60°	1/4" BSP 60°	34	22	2000
	EU-RN31			1/4" NPT	37		
	EU-RN55			3/8" NPT	39		
	EU-RN32		1/4" BSP 120°	1/4" BSP 60°	40	22	3000
	EU-RN33		M16x1.5 60°		39		
	EU-RN28		3/4"-16 UNF 60°	1/2" BSP	44		
	EU-RN34			3/4"-16 UNF 60°	54		
	EU-RN34O			3/4"-16 UNF 60°	63		
	EU-RN49			1/4" BSP 120°	50		
	EU-RN51			1/4" BSP 60°	44		
	EU-RN50			M16x1.5 60°	50		
	EU-RR49	straight connector with male/female thread	3/4"-16 UNF 60°	1/4" BSP 120°	42	22	2000
	EU-RR51O		3/8" BSP 60°	1/2" BSP	53	27	3000
	EU-RE15	elbow connector	1/4" BSP 120°	12.5	35	35	2000
	EU-RE34		3/4"-16 UNF 60°	12.5	40	40	3000
	EU-RT15	tee connector	1/4" BSP 120°	12.5	40	40	2000
	EU-RT34		3/4"-16 UNF 60°	12.5	45	35	3000
	EU-RX15	cross connector	1/4" BSP 120°	-	45	45	2000
	EU-RX34		3/4"-16 UNF 60°	-	55	55	3000

# HIGH PRESSURE - UHP equipment

## Connectors

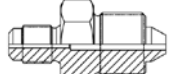
Adapters enable connection of quick release couplings with Ultra High Pressure (UHP) hoses as well as connection of the assemblies with UHP porting blocks. Made of black zinc-plated steel.

picture	code	A1 thread	seal	A2 thread	seal	L [mm]	span. [mm]	press. [bar]
	CJ-HP-199501622	BSP 1/4"	60° inner cone	BSP 1/4"	60° inner cone	31.5	21	2500
	CJ-HP-199501623	BSP 1/4"	60° inner cone	NPT 1/4"	on thread	32	21	1500
	CJ-HP-199501621	BSP 1/4"	60° inner cone	BSPT 1/4"	on thread	33	21	
	CJ-HP-199501603	BSP 1/4"	60° inner cone	NPT 3/8"	on thread	34	21	
	CJ-HP-199501604	BSP 1/4"	60° inner cone	BSPT 3/8"	on thread	35	21	
	CJ-HP-199501602	BSP 1/4"	60° inner cone	BSP 1/4"	120° outer cone	39	21	2500
	CJ-HP-199501605	BSP 1/4"	60° inner cone	UNF 9/16"-18	60° outer cone	37	17	
	CJ-HP-199501606	BSP 1/4"	60° inner cone	UNF 3/4"-16	60° outer cone	42	21	
	CJ-HP-199501607	BSP 1/4"	60° inner cone	M16x1.5	60° outer cone	37	19	
	CJ-HP-199501608	BSP 1/4"	60° inner cone	M22x1.5	60° outer cone	48	27	
	CJ-HP-199500028	BSP 1/4"	120° outer cone	M14x1.5	60° inner cone	37.5	17	
	CJ-HP-199500029	BSP 1/4"	120° outer cone	UNF 9/16"-18	60° inner cone	37.5	17	

# HIGH PRESSURE - UHP equipment

## Connectors

UHP adapters - continued:

picture	code	A1 thread	seal	A2 thread	seal	L [mm]	span. [mm]	press. [bar]
	CJ-HP-199501601	BSP 1/4"	120° outer cone	BSP 1/4"	120° outer cone	45	17	3000
	CJ-HP-199501404	BSP 1/4"	120° outer cone	NPT 3/8"	on thread	40	19	1500
	CJ-HP-199501611	BSP 1/4"	120° outer cone	UNF 3/4"-16	60° outer cone	48.5	21	3000
	CJ-HP-199501610	BSP 1/4"	120° outer cone	M16x1.5	60° outer cone	44	22	
	CJ-HP-199501609	BSP 1/4"	120° outer cone	M22x1.5	60° outer cone	54.5	27	
	CJ-HP-199500022	BSP 1/4"	120° outer cone	UNF 9/16"-18	60° outer cone	43.5	17	
	CJ-HP-199501613	UNF 9/16"-18	60° outer cone	M16x1.5	60° outer cone	44.2	19	
	CJ-HP-199501612	M16x1.5	60° outer cone	M16x1.5	60° outer cone	43	19	
	CJ-HP-199501614	UNF 9/16"-18	60° inner cone	M16x1.5	60° outer cone	38.2	19	2500
	CJ-HP-199500016	BSP 1/8"	rubber-metal seal	-	-	22	4	1500
	CJ-HP-199500015	BSP 1/4"	rubber-metal seal	-	-	26±0.1	5	
	CJ-HP-199501600	BSP 1/4"	120° outer cone	-	-	27	17	3000

# HIGH PRESSURE - UHP equipment

## Connectors

Porting blocks enable to connect several pressure hoses to one pump as well as to connect a pressure gauge. Made of black zinc-plated steel. Flow diameter 5 mm (3/16").

picture	code	description	thread	seal	press. [bar]
	CJ-HP-199501680	4-way porting block (supplied with one blank plug CJ-HP-199501600)	4 x 1/4" BSP	120° inner cone	3000
				rubber-metal seal	1000
	CJ-HP-199501681	3-way pressure gauge block	2 x 1/4" BSP 1 x 1/2" BSP	120° inner cone	2000
				rubber-metal seal	1000
	CJ-HP-199501682	3-way porting block	3 x 1/4" BSP	120° inner cone	3000
				rubber-metal seal	1000
	CJ-HP-199501683	5-way porting block	5 x 1/4" BSP	120° inner cone	3000
				rubber-metal seal	1000
	CJ-HP-199501684	2-way angular block	2 x 1/4" BSP	120° inner cone	3000
				rubber-metal seal	1000
	CJ-HP-199501600	blank plug	1/4" BSP	120° outer cone	3000

# HIGH PRESSURE - UHP equipment

## Connectors - porting blocks

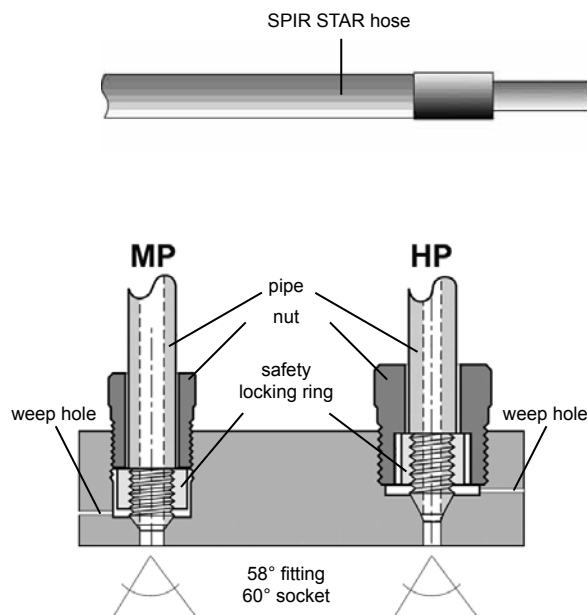
Made of black zinc-plated steel.

Working pressure: 700 bar at safety factor 4:1, 1000 bar at safety factor 2.8:1.

picture	code	description	thread	dimensions	
				A	B
	EU-RB386	multi-level porting block	6 x 3/8" NPT 1 x 1/4" NPT	-	-
	EU-RM387	one level porting block	7 x 3/8" NPT 1 x 1/4" NPT	260	110
	EU-RM389		9 x 3/8" NPT 1 x 1/4" NPT	400	180
	EU-RK383	radial porting block	3 x 3/8" NPT 1 x 1/4" NPT	45	-
	EU-RK385		5 x 3/8" NPT 1 x 1/4" NPT	55	-
	EU-RK387		7 x 3/8" NPT 1 x 1/4" NPT	65	-

# HIGH PRESSURE - UHP equipment

## Information on high pressure connections



MP - (medium pressure) up to 1380 bar (20 000 PSI)  
HP - (high pressure) up to 4140 bar (60 000 PSI)

The nut presses against the safety locking ring screwed on the pipe end. For HP - the ring hides in the nut, for MP - it is fully visible.

High pressure connections are available in several types, but most of them derive from the Autoclave standard. For MP, HP and HP Waterblast, there is 58° cone at the end of a pipe, and 60° cone in the body of a socket. Metal-to-metal sealing is obtained by interfaces of the cones. HP Waterblast is a derivative of the HP system.

Procedure for the connection described above:

On properly prepared pipe (58° cone + left-hand thread of appropriate length) a nut must be inserted and a safety locking ring screwed. The correct position of the locking ring is reached when one or two threads are visible from the cone side. Once the pipe is ready, it should be placed in the socket, tightened by hand and then with a torque spanner according to working pressure and pipe size requirements.

**Table of safety locking ring thread sizes, nuts and recommended tightening torques.**

character- istic	MP					HP			HP WATERBLAST		
	1/4"	3/8"	9/16"	3/4"	1"	1/4"	3/8"	9/16"	1/4"	3/8"	9/16"
thread on the pipe	1/4"-28 UNF LH	3/8"-24 UNF LH	9/16"-18 UNF LH	3/4"x16 UNF LH	1"x14 UNF LH	1/4"-28 UNF LH	3/8"-24 UNF LH	9/16"-18 UNF LH	1/4"-28 UNF LH	3/8"-24 UNF LH	9/16"-18 UNF LH or M14x1.5 LH
nut thread	7/16"-20 UNF	9/16"-18 UNF	13/16"-16 UNF	3/4"-14 NPSM	1.3/8"-14 NPSM	9/16"-18 UNF	3/4"-16 UNF	1.1/8"-12 UNF	M16x1.5	M20x1.5	M30x2 or M26x1.5
max. work. pressure [bar]	1380	1380	1380	1380	1380	4140	4140	4140	3200	3200	3200
tightening torque [Nm]	30	40	75	145	310	34	68	102	34	68	102

Always wear protective clothing while working close to high pressure devices without housing. Always check the connection. If possible, the start-up of installation should be done at relatively low pressure. Do it for your own safety. In case of faulty connection, leakage of medium through weep hole takes place - see picture above.

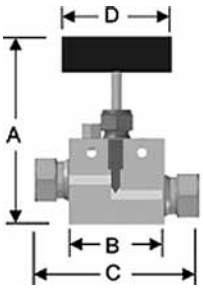
# HIGH PRESSURE - UHP equipment

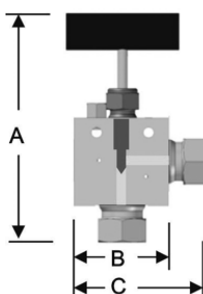
## Connectors

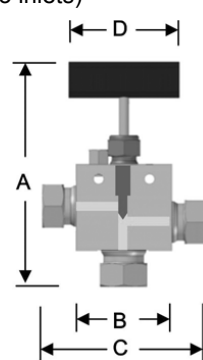
High-pressure (HP) connectors allow to build rigid pipe installations and to attach high pressure hose assemblies. All elements are designed to work under pressure in three ranges: 1380 bar, 2070 bar and 4140 bar. Made of AISI 316L steel, designed to work with liquid and gaseous media.

Working temperature from -73°C up to +315°C.

HP pipe connection with 58° cone and left-hand imperial thread.

picture	code	pipe [inch]	A [mm]	B [mm]	C [mm]	D [mm]	thickn. [mm]	DN [mm]	working pressure
Two way straight needle valve 	SM-S20V01T01	1/4	123	38.1	70	80	15.88	3.2	20000 PSI 1380 bar
	SM-S20V01T02	3/8	123	50.8	76	80	19.05	5.5	
	SM-S20V01T03	9/16	160	63.5	96	100	25.4	8	
	SM-S30V01T01	1/4	124	34.93	80	80	25.4	2.4	30000 PSI 2070 bar
	SM-S30V01T02	3/8	128	44.45	88	80	25.4	3.2	
	SM-S30V01T03	9/16	135	66.68	121	80	38.1	3.2	
	SM-S60V01T01	1/4	124	34.93	80	80	25.4	1.6	60000 PSI 4140 bar
	SM-S60V01T02	3/8	128	44.45	88	80	25.4	1.6	
	SM-S60V01T03	9/16	135	66.68	121	80	38.1	2	

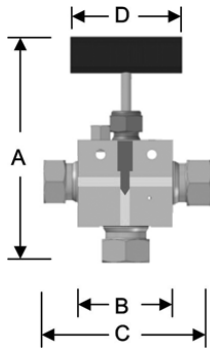
picture	code	pipe [inch]	A [mm]	B [mm]	C [mm]	D [mm]	thickn. [mm]	DN [mm]	working pressure
Two way 90° needle valve 	SM-S20V02T01	1/4	123	38.1	60	80	15.88	3.2	20000 PSI 1380 bar
	SM-S20V02T02	3/8	123	50.8	63	80	19.05	5.5	
	SM-S20V02T03	9/16	160	63.5	80	100	25.4	8	
	SM-S30V02T01	1/4	124	34.93	65	80	25.4	2.4	30000 PSI 2070 bar
	SM-S30V02T02	3/8	128	44.45	69	80	25.4	3.2	
	SM-S30V02T03	9/16	135	66.68	94	80	38.1	3.2	
	SM-S60V02T01	1/4	124	34.93	65	80	25.4	1.6	60000 PSI 4140 bar
	SM-S60V02T02	3/8	128	44.45	69	80	25.4	1.6	
	SM-S60V02T03	9/16	135	66.68	94	80	38.1	2	

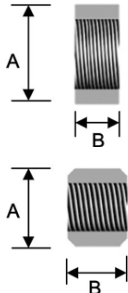
picture	code	pipe [inch]	A [mm]	B [mm]	C [mm]	D [mm]	thickn. [mm]	DN [mm]	working pressure
Three way needle valve (two inlets) 	SM-S20V03T01	1/4	132	38.1	70	80	15.88	3.2	20000 PSI 1380 bar
	SM-S20V03T02	3/8	136	50.8	76	80	19.05	5.5	
	SM-S20V03T03	9/16	177	63.5	98	100	25.4	8	
	SM-S30V03T01	1/4	138	34.93	80	80	25.4	2.4	30000 PSI 2070 bar
	SM-S30V03T02	3/8	147	44.45	88	80	25.4	3.2	
	SM-S30V03T03	9/16	162	66.68	121	80	38.1	3.2	
	SM-S60V03T01	1/4	138	34.93	80	80	25.4	1.6	60000 PSI 4140 bar
	SM-S60V03T02	3/8	147	44.45	88	80	25.4	1.6	
	SM-S60V03T03	9/16	162	66.68	121	80	38.1	2	

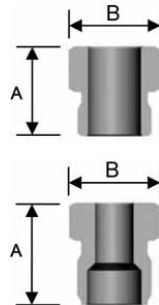


# HIGH PRESSURE - UHP equipment

## Connectors

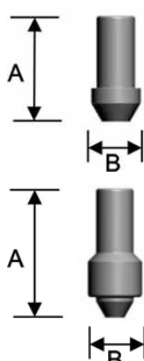
picture	code	pipe [inch]	A [mm]	B [mm]	C [mm]	D [mm]	thickn. [mm]	DN [mm]	working pressure
<p>Three way needle valves (one inlet)</p> 	SM-S20V04T01	1/4	132	38.1	70	80	15.88	3.2	20000 PSI 1380 bar
	SM-S20V04T02	3/8	136	50.8	76	80	19.05	5.5	
	SM-S20V04T03	9/16	177	63.5	98	100	25.4	8	
	SM-S30V04T01	1/4	138	34.93	80	80	25.4	2.4	30000 PSI 2070 bar
	SM-S30V04T02	3/8	147	44.45	88	80	25.4	3.2	
	SM-S30V04T03	9/16	162	66.68	121	80	38.1	3.2	
	SM-S60V04T01	1/4	138	34.93	80	80	25.4	1.6	60000 PSI 4140 bar
	SM-S60V04T02	3/8	147	44.45	88	80	25.4	1.6	
	SM-S60V04T03	9/16	162	66.68	121	80	38.1	2	

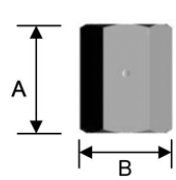
picture	code	pipe [inch]	A [mm]	B [mm]	working pressure
<p>Ring</p> 	SM-S20F12T01	1/4	9.5	5.6	20000 PSI 1380 bar
	SM-S20F12T02	3/8	12.4	6.3	
	SM-S20F12T03	9/16	18.4	8	
	SM-S60F12T01	1/4	9.5	9.5	60000 PSI 4140 bar
	SM-S60F12T02	3/8	12.7	13.5	
	SM-S60F12T03	9/16	20.64	20.64	

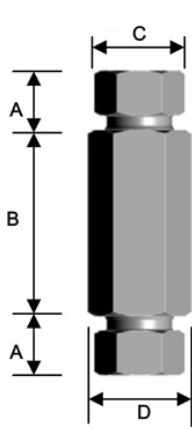
picture	code	pipe [inch]	A [mm]	span. B [mm]	working pressure
<p>Nut</p> 	SM-S20F13T01	1/4	14.5	12.7	20000 PSI 1380 bar
	SM-S20F13T02	3/8	19	15.87	
	SM-S20F13T03	9/16	25.5	22.2	
	SM-S60F13T01	1/4	22	15.88	60000 PSI 4140 bar
	SM-S60F13T02	3/8	30	20.64	
	SM-S60F13T03	9/16	40	30.16	

# HIGH PRESSURE - UHP equipment

## Connectors

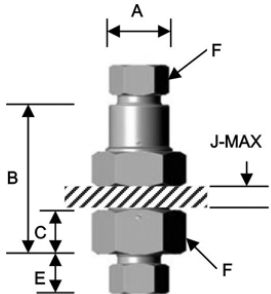
picture	code	pipe [inch]	A [mm]	B [mm]	working pressure
Blank plug 	SM-S20F11T01	1/4	23.5	9.5	20000 PSI 1380 bar
	SM-S20F11T02	3/8	30.5	12.4	
	SM-S20F11T03	9/16	40	18.3	
	SM-S60F11T01	1/4	28	9.5	60000 PSI 4140 bar
	SM-S60F11T02	3/8	37	12.7	
	SM-S60F11T03	9/16	50	20.64	

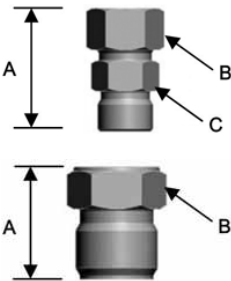
picture	code	pipe [inch]	A [mm]	span. B [mm]	working pressure
Cap 	SM-S20F10T01	1/4	21	20	20000 PSI 1380 bar
	SM-S20F10T02	3/8	29	26	
	SM-S20F10T03	9/16	35	35	
	SM-S60F10T01	1/4	22.23	16	60000 PSI 4140 bar
	SM-S60F10T02	3/8	31.75	20	
	SM-S60F10T03	9/16	38.1	26	

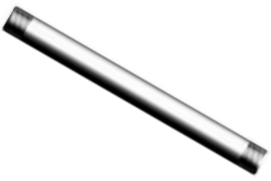
picture	code	pipe [inch]	A [mm]	B [mm]	span. C [mm]	span. D [mm]	working pressure
Straight connector 	SM-S20F08T01	1/4	9.22	44.5	13	26	20000 PSI 1380 bar
	SM-S20F08T02	3/8	12.78	50.8	16	26	
	SM-S20F08T03	9/16	17.12	60.33	23	35	
	SM-S60F08T01	1/4	14.63	41	16	16	60000 PSI 4140 bar
	SM-S60F08T02	3/8	18.68	45	21	20	
	SM-S60F08T03	9/16	26.93	54	31	16	

# HIGH PRESSURE - UHP equipment

## Connectors

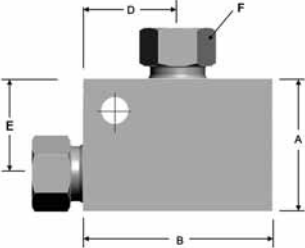
picture	code	pipe [inch]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	J [mm]	span. F [mm]	working pressure
	SM-S20F09T01	1/4	20	48	13.5	25.4	9.22	10	13	20000 PSI 1380 bar
	SM-S20F09T02	3/8	23	55	16	34.9	12.78	10	16	
	SM-S20F09T03	9/16	30	64	19	34.9	17.12	10	23	
	SM-S30F09T01	1/4	23	50	12.7	25.4	14.63	10	16	30000 PSI 2070 bar
	SM-S30F09T02	3/8	30	60.33	19	34.9	18.68	10	21	
	SM-S30F09T03	9/16	43	69.85	25.4	47.63	26.93	10	31	
	SM-S60F09T01	1/4	23	50.8	12.7	25.4	14.63	10	16	60000 PSI 4140 bar
	SM-S60F09T02	3/8	30	60.33	19	34.9	18.68	10	21	
	SM-S60F09T03	9/16	43	69.85	25.4	47.63	26.93	10	31	

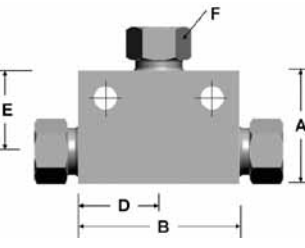
picture	code	pipe [inch]	A [mm]	span. B [mm]	span. C [mm]	working pressure
	SM-S20F14T01	1/4	32.01	16	13	20000 PSI 1380 bar
	SM-S20F14T02	3/8	37.21	20	16	
	SM-S20F14T03	9/16	47.19	26	23	
	SM-S60F14T01	1/4	22	16	-	60000 PSI 4140 bar
	SM-S60F14T02	3/8	30	21	-	
	SM-S60F14T03	9/16	40	31	-	

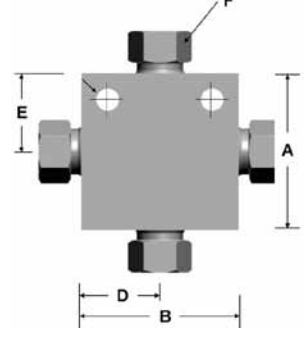
picture	code	pipe [inch]	length [mm/inch]							working pressure
			69.85 2.3/4	76.2 3	101.6 4	152.4 6	203.2 8	254 10	305 12	
	SM-S20F16T01-...	1/4	A	B	C	D	E	F	G	20000 PSI 1380 bar
	SM-S20F16T02-...	3/8	-	-	C	D	E	F	G	
	SM-S20F16T03-...	9/16	-	-	-	D	E	F	G	
	SM-S60F16T01-...	1/4	A	B	C	D	E	F	G	60000 PSI 4140 bar
	SM-S60F16T02-...	3/8	-	-	C	D	E	F	G	
	SM-S60F16T03-...	9/16	-	-	-	D	E	F	G	

# HIGH PRESSURE - UHP equipment

## Connectors

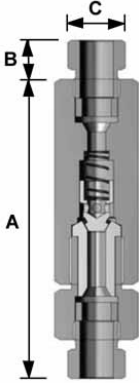
picture	code	pipe [inch]	A [mm]	B [mm]	D [mm]	E [mm]	thickn. [mm]	span. F [mm]	working pressure
	SM-S20F04T01	1/4	28.45	38.1	19.05	19.05	15.88	13	20000 PSI 1380 bar
	SM-S20F04T02	3/8	35.05	50.8	25.4	25.4	19.05	16	
	SM-S20F04T03	9/16	44.45	63.5	31.75	31.75	25.4	23	
	SM-S60F04T01	1/4	38.1	34.93	22.23	25.4	25.4	16	60000 PSI 4140 bar
	SM-S60F04T02	3/8	38.1	44.45	31.75	25.4	25.4	21	
	SM-S60F04T03	9/16	47.63	66.68	47.63	28.58	38.1	31	

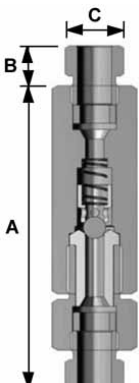
picture	code	pipe [inch]	A [mm]	B [mm]	D [mm]	E [mm]	thickn. [mm]	span. F [mm]	working pressure
	SM-S20F05T01	1/4	28.45	38.1	19.05	19.05	15.88	13	20000 PSI 1380 bar
	SM-S20F05T02	3/8	35.05	50.8	25.4	25.4	19.05	16	
	SM-S20F05T03	9/16	44.45	63.5	31.75	31.75	25.4	23	
	SM-S60F05T01	1/4	34.93	50.8	22.23	22.23	25.4	16	60000 PSI 4140 bar
	SM-S60F05T02	3/8	39.69	50.8	26.99	26.99	25.4	21	
	SM-S60F05T03	9/16	53.98	66.68	34.93	34.93	38.1	31	

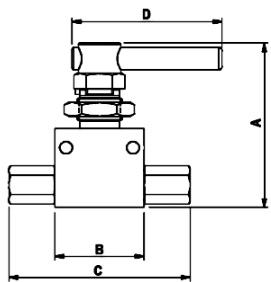
picture	code	pipe [inch]	A [mm]	B [mm]	D [mm]	E [mm]	thickn. [mm]	span. F [mm]	working pressure
	SM-S20F06T01	1/4	38.1	38.1	19.05	19.05	15.88	13	20000 PSI 1380 bar
	SM-S20F06T02	3/8	50.8	50.8	25.4	25.4	19.05	16	
	SM-S20F06T03	9/16	63.5	63.5	31.75	31.75	25.4	23	
	SM-S60F06T01	1/4	38.1	50.8	25.4	19.05	25.4	16	60000 PSI 4140 bar
	SM-S60F06T02	3/8	50.8	53.98	26.99	25.4	25.4	21	
	SM-S60F06T03	9/16	66.68	69.85	34.93	33.34	38.1	31	

# HIGH PRESSURE - UHP equipment

## Connectors

picture	code	pipe [inch]	A [mm]	B [mm]	span. C [mm]	working pressure
<p>Check valve</p> 	SM-S20F01T01	1/4	75	9.22	13	20000 PSI 1380 bar
	SM-S20F01T02	3/8	80	12.78	16	
	SM-S20F01T03	9/16	114	17.12	23	
	SM-S30F01T01	1/4	86	14.63	16	30000 PSI 2070 bar
	SM-S30F01T02	3/8	97	18.68	21	
	SM-S30F01T03	9/16	117	26.93	31	
	SM-S60F01T01	1/4	86	14.63	16	60000 PSI 4140 bar
	SM-S60F01T02	3/8	97	18.68	21	
	SM-S60F01T03	9/16	117	26.93	31	

picture	code	pipe [inch]	A [mm]	B [mm]	span. C [mm]	working pressure
<p>Ball check valve</p> 	SM-S20F02T01	1/4	75	10	13	20000 PSI 1380 bar
	SM-S20F02T02	3/8	80	12	16	
	SM-S20F02T03	9/16	114	13.5	23	
	SM-S30F02T01	1/4	86	14.63	16	30000 PSI 2070 bar
	SM-S30F02T02	3/8	97	18.68	21	
	SM-S30F02T03	9/16	117	26.93	31	
	SM-S60F02T01	1/4	86	14.63	16	60000 PSI 4140 bar
	SM-S60F02T02	3/8	97	18.68	21	
	SM-S60F02T03	9/16	117	26.93	31	

picture	code	thread / pipe	A [mm]	B [mm]	C [mm]	D [mm]	thickn. [mm]	DN [mm]	working pressure
<p>Two way ball valve</p> 	SM-B15V01T11	1/4" NPT	96	50.5	103.3	70	25.4	6.4	15000 PSI 1034 bar
	SM-B15V01T12	3/8" NPT	96	50.5	103.3	70	25.4	6.4	
	SM-B15V01T13	1/2" NPT	104	76.2	137.7	115	34.9	9.5	
	SM-B20V01T01	1/4"	96	50.5	103.3	70	25.4	2.8	20000 PSI 1380 bar
	SM-B20V01T02	3/8"	96	50.5	103.3	70	25.4	5.2	
	SM-B20V01T03	9/16"	104	76.2	143.9	115	34.9	9	

- For SM-B15 type, connections with NPT female thread; for SM-B20 type, high pressure connections MP.
- Working temperature from -30° C up to +150° C

## HIGH PRESSURE - UHP equipment



### CEJN pressure gauges 940 series

<b>Case:</b>	AISI 316 or AISI 304 steel
<b>Dial:</b>	Aluminium
<b>Needle:</b>	Aluminium or stainless steel
<b>Seal:</b>	Polychloroprene
<b>Filling:</b>	98% glycerine
<b>Working temp.:</b>	From -15°C up to +65°C
<b>Internal protection:</b>	IP 65
<b>Accuracy:</b>	Ø 63: ±1.6% of scale Ø 100, Ø 150: ±1% of scale
<b>Versions:</b>	Bottom connection Back connection

CEJN pressure gauges are designed for ultra-high pressure applications. A measuring range should be selected according to working pressure so as not to exceed 75% of the maximum measuring range. A dual measuring scale - in PSI and BAR standard. Available with bottom or back (panel mounting) connection. The pressure gauges can be mounted using CEJN porting blocks.

code	diameter [mm]	thread size [inch]	pressure [bar / PSI]	version
CJ-HP-199402120	63	BSP 1/4"	1000 / 14500	bottom connection
CJ-HP-199402121		NPT 1/4"	1000 / 14500	
CJ-HP-199403120	100	BSP 1/2"	1000 / 14500	
CJ-HP-199403140		NPT 1/2"	1000 / 14500	
CJ-HP-199403121		BSP 1/2"	1600 / 23200	
CJ-HP-199403122		BSP 1/2"	2060 / 20870	
CJ-HP-199404120	150	BSP 1/2"	1000 / 14500	
CJ-HP-199404121		BSP 1/2"	1600 / 23200	
CJ-HP-199404122		BSP 1/2"	2060 / 29870	
CJ-HP-199402320	63	BSP 1/4"	1000 / 14500	back connection
CJ-HP-199402321		NPT 1/4"	1000 / 14500	
CJ-HP-199403320	100	BSP 1/2"	1000 / 14500	
CJ-HP-199403321		BSP 1/2"	1600 / 23200	
CJ-HP-199403322		BSP 1/2"	2060 / 29870	
CJ-HP-199404320	150	BSP 1/2"	1000 / 14500	
CJ-HP-199404321		BSP 1/2"	1600 / 23200	
CJ-HP-199404322		BSP 1/2"	2060 / 29870	

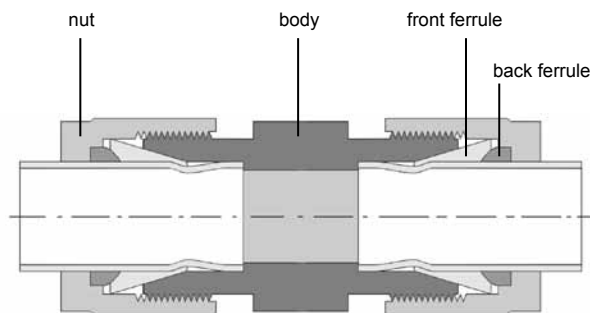
### LET-LOK® type connectors

#### Description and application

LET-LOK® connectors for pipes are designed mainly for chemical, petrochemical, pharmaceutical and power industry, nuclear power plants and process engineering. Designed to work under high pressure, vacuum, vibration, high temperatures, and where high leak tightness of connections is required. Made in accordance with an industrial specification for two O-ring connectors in the highest quality applications. To meet all production requirements, fully automatic machining centres are utilized to make products which undergo 100% quality control at different stages of production process.

LET-LOK® connectors are available as couplings (to connect several pipes) and connectors (to join pipes with fittings with male or female thread).

#### Structure of LET-LOK® fitting



The mechanism of a coupling causes gripping and sealing of connection on the cone of the body and front ferrule. The pipe deforms and the seal is made only by metal parts which allows to get the maximum working temperature of about +650°C, both for high pressure and vacuum. Such connection provides perfect leak tightness without unnecessary stress.

#### Basic advantages of LET-LOK® connectors

- A wide range of pipe diameters, from 2 up to 50 mm and from 1/16" up to 2".
- Maintains high leak tightness of the connection even after repeated assembly.
- Very high leak tightness in high pressure and temperature conditions, vacuum, vibration and rapid changes of pressure.
- Made in 4 material versions: stainless steel AISI 316, brass, Monel 400 alloy and Hastelloy C-276.
- To facilitate identification, each connector is marked with a material name it is made of and with pipe outside diameter.
- Connectors are assembled using a regular spanner which lowers the costs of installation and service.

#### The pipes used with LET-LOK® connectors

In order to ensure maximum reliability, durability and safety of the connection, special attention should be given to the matching of a pipe to an application. The pipes made of AISI 304 or AISI 316 stainless steel in connection with stainless steel LET-LOK® connectors can be used in the widest range of applications. The pipes should be made in accordance with the requirements of ASTM A213, ASTM A269 standards or equivalent.

When choosing the pipe, notice the following:

- The pipe surface should be smooth without scratches, clean from dirt.
- The pipe must not be flattened or oval. It can damage the connector and cause leakage.
- The pipe should be annealed and made of material which is softer than the material of the connector (90 HRB or lower).
- The thickness of the wall must be adapted to the working pressure in the installation.

Copper pipes can be also used but in connection with brass LET-LOK® fittings (contact TUBES INTERNATIONAL® Sales or Technical Department).

# INSTRUMENTATION - connectors

## LET-LOK® type connectors

O.D. [inch]	maximum working pressure [bar] for seamless stainless steel pipes - imperial															
	wall thickness [inch]															
	0.010	0.012	0.014	0.016	0.020	0.028	0.035	0.049	0.065	0.083	0.095	0.109	0.120	0.134	0.156	0.188
1/16	386	473	572	666	846											
1/8						600*	770									
3/16						379*	490	724								
1/4						283*	359	524	724							
5/16							283*	407	559							
3/8							235*	334	451							
1/2							173	258*	355	465						
5/8								203	279*	361	417					
3/4								168	230*	292	341	403				
7/8								141	196	241*	290	334				
1									165	214*	248	290	324			
1.1/4										165	193*	227	248	283	338	
1.1/2											159	186	207*	234	276	338
2												138	152	172	200*	249

O.D. [mm]	maximum working pressure [bar] for seamless stainless steel pipes - metric														
	wall thickness [mm]														
	0.8	1.0	1.2	1.5	1.8	2.0	2.2	2.5	2.8	3.0	3.5	4.0	4.5	5.0	
3	670*														
6	310*	420	540	710											
8		310*	390	520											
10		240*	300	400	510	580									
12		200*	250	330	410	470									
14		160	200*	270	340	380	430								
15		150	190	250	310	360	400								
16			170	230*	290	330	370	400							
18			150	200*	260	290	320	370							
20			140	180	230*	260	290	330	380						
22			120	160	200	230*	260	300	340						
25					180	200	230*	260	290	320					
38							140	190	190	200*	240	270	310		
50										150	180	210	240*	270	

\* - recommended minimum pipe wall thickness for gases

Working pressure correction factor for stainless steel pipes depending on temperature:

temperature [°C]	93	204	316	427	538	649
coefficient [AISI 316]	1	0.96	0.85	0.79	0.76	0.37


The allowable working pressure of LET-LOK® connectors is defined by the lower of two values: the maximum working pressure of pipes with certain outside diameter at a given temperature and (for connectors with thread) maximum working pressure for certain size and type of threaded connection according to the table below:


thread size [inch]	maximum working pressure [bar] for connectors with NPT and BSP(T) threads			
	AISI 316		brass	
	male thread	female thread	male thread	female thread
1/16	759	462	379	228
1/8	690	448	345	221
1/4	552	455	276	228
3/8	538	366	269	179
1/2	531	338	262	165
3/4	503	317	248	159
1	366	303	179	152
1.1/4	414	345	207	172
1.1/2	345	317	172	159
2	269	269	131	131




# INSTRUMENTATION - connectors

## LET-LOK® type connectors

Metric ferrules		
		
<b>M760L...</b>		
code		pipe O.D. [mm]
back ferrule	front ferrule	
HM-LM760LB-02-SS	HM-LM760LF-02-SS	2
HM-LM760LB-03-SS	HM-LM760LF-03-SS	3
HM-LM760LB-04-SS	HM-LM760LF-04-SS	4
HM-LM760LB-06-SS	HM-LM760LF-06-SS	6
HM-LM760LB-08-SS	HM-LM760LF-08-SS	8
HM-LM760LB-10-SS	HM-LM760LF-10-SS	10
HM-LM760LB-12-SS	HM-LM760LF-12-SS	12
HM-LM760LB-14-SS	HM-LM760LF-14-SS	14
HM-LM760LB-15-SS	HM-LM760LF-15-SS	15
HM-LM760LB-16-SS	HM-LM760LF-16-SS	16
HM-LM760LB-18-SS	HM-LM760LF-18-SS	18
HM-LM760LB-20-SS	HM-LM760LF-20-SS	20
HM-LM760LB-22-SS	HM-LM760LF-22-SS	22
HM-LM760LB-25-SS	HM-LM760LF-25-SS	25
HM-LM760LB-38-SS	HM-LM760LF-38-SS	38
HM-LM760LB-50-SS	HM-LM760LF-50-SS	50

Imperial ferrules		
		
<b>C760L...</b>		
code		pipe O.D. [inch]
back ferrule	front ferrule	
HM-LC760LB-01-SS	HM-LC760LF-01-SS	1/16
HM-LC760LB-02-SS	HM-LC760LF-02-SS	1/8
HM-LC760LB-03-SS	HM-LC760LF-03-SS	3/16
HM-LC760LB-04-SS	HM-LC760LF-04-SS	1/4
HM-LC760LB-05-SS	HM-LC760LF-05-SS	5/16
HM-LC760LB-06-SS	HM-LC760LF-06-SS	3/8
HM-LC760LB-08-SS	HM-LC760LF-08-SS	1/2
HM-LC760LB-10-SS	HM-LC760LF-10-SS	5/8
HM-LC760LB-12-SS	HM-LC760LF-12-SS	3/4
HM-LC760LB-14-SS	HM-LC760LF-14-SS	7/8
HM-LC760LB-16-SS	HM-LC760LF-16-SS	1
HM-LC760LB-20-SS	HM-LC760LF-20-SS	1.1/4
HM-LC760LB-24-SS	HM-LC760LF-24-SS	1.1/2
HM-LC760LB-32-SS	HM-LC760LF-32-SS	2

Metric sets		
		
<b>M760L...S</b>		
code (front + back) 10 pcs	code (front + back + nut) 5 pcs	pipe O.D. [mm]
HM-LM760LS-02-SS	HM-LM760LNS-02-SS	2
HM-LM760LS-03-SS	HM-LM760LNS-03-SS	3
HM-LM760LS-04-SS	HM-LM760LNS-04-SS	4
HM-LM760LS-06-SS	HM-LM760LNS-06-SS	6
HM-LM760LS-08-SS	HM-LM760LNS-08-SS	8
HM-LM760LS-10-SS	HM-LM760LNS-10-SS	10
HM-LM760LS-12-SS	HM-LM760LNS-12-SS	12
HM-LM760LS-14-SS	HM-LM760LNS-14-SS	14
HM-LM760LS-15-SS	HM-LM760LNS-15-SS	15
HM-LM760LS-16-SS	HM-LM760LNS-16-SS	16
HM-LM760LS-18-SS	HM-LM760LNS-18-SS	18
HM-LM760LS-20-SS	HM-LM760LNS-20-SS	20
HM-LM760LS-22-SS	HM-LM760LNS-22-SS	22
HM-LM760LS-25-SS	HM-LM760LNS-25-SS	25

Imperial sets		
		
<b>C760L...S</b>		
code (front + back) 10 pcs	code (front + back + nut) 5 pcs	pipe O.D. [inch]
HM-LC760LS-02-SS	HM-LC760LNS-02-SS	1/8
HM-LC760LS-03-SS	HM-LC760LNS-03-SS	3/16
HM-LC760LS-04-SS	HM-LC760LNS-04-SS	1/4
HM-LC760LS-05-SS	HM-LC760LNS-05-SS	5/16
HM-LC760LS-06-SS	HM-LC760LNS-06-SS	3/8
HM-LC760LS-08-SS	HM-LC760LNS-08-SS	1/2
HM-LC760LS-10-SS	HM-LC760LNS-10-SS	5/8
HM-LC760LS-12-SS	HM-LC760LNS-12-SS	3/4
HM-LC760LS-14-SS	HM-LC760LNS-14-SS	7/8
HM-LC760LS-16-SS	HM-LC760LNS-16-SS	1

## INSTRUMENTATION - connectors

### LET-LOK® type connectors

Nut for metric pipe



**M761L**

code	pipe O.D. [mm]	spanner size [mm]
HM-LM761L-02-SS	2	12
HM-LM761L-03-SS	3	12
HM-LM761L-04-SS	4	12
HM-LM761L-06-SS	6	14
HM-LM761L-08-SS	8	16
HM-LM761L-10-SS	10	19
HM-LM761L-12-SS	12	22
HM-LM761L-14-SS	14	25
HM-LM761L-15-SS	15	25
HM-LM761L-16-SS	16	25
HM-LM761L-18-SS	18	30
HM-LM761L-20-SS	20	32
HM-LM761L-22-SS	22	32
HM-LM761L-25-SS	25	38
HM-LM761L-38-SS	38	60
HM-LM761L-50-SS	50	3 cale

Nut for imperial pipe



**C761L**

code	pipe O.D. [inch]	spanner size [inch]
HM-LC761L-01-SS	1/16	5/16
HM-LC761L-02-SS	1/8	7/16
HM-LC761L-03-SS	3/16	1/2
HM-LC761L-04-SS	1/4	9/16
HM-LC761L-05-SS	5/16	5/8
HM-LC761L-06-SS	3/8	11/16
HM-LC761L-08-SS	1/2	7/8
HM-LC761L-10-SS	5/8	1
HM-LC761L-12-SS	3/4	1.1/8
HM-LC761L-14-SS	7/8	1.1/4
HM-LC761L-16-SS	1	1.1/2
HM-LC761L-20-SS	1.1/4	1.7/8
HM-LC761L-24-SS	1.1/2	2.1/4
HM-LC761L-32-SS	2	3

Metric tube insert



**M760LI**

code	pipe O.D. [mm]	pipe I.D. [mm]
HM-LM760LI-06-04-SS	6	4
HM-LM760LI-08-06-SS	8	6
HM-LM760LI-10-08-SS	10	8
HM-LM760LI-12-08-SS	12	8
HM-LM760LI-12-10-SS	12	10

Imperial tube insert



**C760LI**

code	pipe O.D. [inch]	pipe I.D. [inch]
HM-LC760LI-03-02-SS	3/16	1/8
HM-LC760LI-04-02-SS	1/4	1/8
HM-LC760LI-04-03-SS	1/4	3/16
HM-LC760LI-05-02-SS	5/16	1/8
HM-LC760LI-05-03-SS	5/16	3/16
HM-LC760LI-05-04-SS	5/16	1/4
HM-LC760LI-06-03-SS	3/8	3/16
HM-LC760LI-06-04-SS	3/8	1/4
HM-LC760LI-08-04-SS	1/2	1/4
HM-LC760LI-08-06-SS	1/2	3/8
HM-LC760LI-10-06-SS	5/8	3/8
HM-LC760LI-10-08-SS	5/8	1/2
HM-LC760LI-12-08-SS	3/4	1/2
HM-LC760LI-12-10-SS	3/4	5/8
HM-LC760LI-16-12-SS	1	3/4

## INSTRUMENTATION - connectors

### LET-LOK® type connectors

Straight union for metric pipes



**M762L**

code	pipe O.D. [mm]
HM-LM762L-02-SS	2
HM-LM762L-03-SS	3
HM-LM762L-04-SS	4
HM-LM762L-06-SS	6
HM-LM762L-08-SS	8
HM-LM762L-10-SS	10
HM-LM762L-12-SS	12
HM-LM762L-14-SS	14
HM-LM762L-15-SS	15
HM-LM762L-16-SS	16
HM-LM762L-18-SS	18
HM-LM762L-20-SS	20
HM-LM762L-22-SS	22
HM-LM762L-25-SS	25
HM-LM762L-38-SS	38
HM-LM762L-50-SS	50

Straight union for imperial pipes



**C762L**

code	pipe O.D. [inch]
HM-LC762L-01-SS	1/16
HM-LC762L-02-SS	1/8
HM-LC762L-03-SS	3/16
HM-LC762L-04-SS	1/4
HM-LC762L-05-SS	5/16
HM-LC762L-06-SS	3/8
HM-LC762L-08-SS	1/2
HM-LC762L-10-SS	5/8
HM-LC762L-12-SS	3/4
HM-LC762L-14-SS	7/8
HM-LC762L-16-SS	1
HM-LC762L-20-SS	1.1/4
HM-LC762L-24-SS	1.1/2
HM-LC762L-32-SS	2

Straight reducing union for metric pipes



**M763L**

code	pipe O.D. [mm]	pipe O.D. [mm]
HM-LM763L-03-02-SS	3	2
HM-LM763L-06-02-SS	6	2
HM-LM763L-06-03-SS	6	3
HM-LM763L-06-04-SS	6	4
HM-LM763L-08-06-SS	8	6
HM-LM763L-10-06-SS	10	6
HM-LM763L-10-08-SS	10	8
HM-LM763L-12-06-SS	12	6
HM-LM763L-12-08-SS	12	8
HM-LM763L-12-10-SS	12	10
HM-LM763L-16-10-SS	16	10
HM-LM763L-16-12-SS	16	12
HM-LM763L-18-12-SS	18	12
HM-LM763L-25-12-SS	25	12
HM-LM763L-25-20-SS	25	20
HM-LM763L-38-20-SS	38	20
HM-LM763L-38-25-SS	38	25

Straight reducing union for imperial pipes



**C763L**

code	pipe O.D. [inch]	pipe O.D. [inch]
HM-LC763L-02-01-SS	1/8	1/16
HM-LC763L-03-01-SS	3/16	1/16
HM-LC763L-03-02-SS	3/16	1/8
HM-LC763L-04-01-SS	1/4	1/16
HM-LC763L-04-02-SS	1/4	1/8
HM-LC763L-04-03-SS	1/4	3/16
HM-LC763L-05-02-SS	5/16	1/8
HM-LC763L-05-04-SS	5/16	1/4
HM-LC763L-06-01-SS	3/8	1/16
HM-LC763L-06-02-SS	3/8	1/8
HM-LC763L-06-04-SS	3/8	1/4
HM-LC763L-06-05-SS	3/8	5/16
HM-LC763L-08-02-SS	1/2	1/8
HM-LC763L-08-04-SS	1/2	1/4
HM-LC763L-08-06-SS	1/2	3/8
HM-LC763L-10-06-SS	5/8	3/8
HM-LC763L-10-08-SS	5/8	1/2
HM-LC763L-12-04-SS	3/4	1/4
HM-LC763L-12-06-SS	3/4	3/8
HM-LC763L-12-08-SS	3/4	1/2
HM-LC763L-12-10-SS	3/4	5/8
HM-LC763L-16-08-SS	1	1/2
HM-LC763L-16-12-SS	1	3/4

## INSTRUMENTATION - connectors

### LET-LOK® type connectors

Tee for metric pipes



**M764L**

code	pipe O.D. [mm]
HM-LM764L-02-SS	2
HM-LM764L-03-SS	3
HM-LM764L-04-SS	4
HM-LM764L-06-SS	6
HM-LM764L-08-SS	8
HM-LM764L-10-SS	10
HM-LM764L-12-SS	12
HM-LM764L-14-SS	14
HM-LM764L-15-SS	15
HM-LM764L-16-SS	16
HM-LM764L-18-SS	18
HM-LM764L-20-SS	20
HM-LM764L-22-SS	22
HM-LM764L-25-SS	25
HM-LM764L-38-SS	38
HM-LM764L-50-SS	50

Tee for imperial pipes



**C764L**

code	pipe O.D. [inch]
HM-LC764L-01-SS	1/16
HM-LC764L-02-SS	1/8
HM-LC764L-03-SS	3/16
HM-LC764L-04-SS	1/4
HM-LC764L-05-SS	5/16
HM-LC764L-06-SS	3/8
HM-LC764L-08-SS	1/2
HM-LC764L-10-SS	5/8
HM-LC764L-12-SS	3/4
HM-LC764L-14-SS	7/8
HM-LC764L-16-SS	1
HM-LC764L-20-SS	1.1/4
HM-LC764L-24-SS	1.1/2
HM-LC764L-32-SS	2

90° elbow for metric pipes



**M765L**

code	pipe O.D. [mm]
HM-LM765L-02-SS	2
HM-LM765L-03-SS	3
HM-LM765L-04-SS	4
HM-LM765L-06-SS	6
HM-LM765L-08-SS	8
HM-LM765L-10-SS	10
HM-LM765L-12-SS	12
HM-LM765L-14-SS	14
HM-LM765L-15-SS	15
HM-LM765L-16-SS	16
HM-LM765L-18-SS	18
HM-LM765L-20-SS	20
HM-LM765L-22-SS	22
HM-LM765L-25-SS	25
HM-LM765L-38-SS	38
HM-LM765L-50-SS	50

90° elbow for imperial pipes



**C765L**

code	pipe O.D. [inch]
HM-LC765L-01-SS	1/16
HM-LC765L-02-SS	1/8
HM-LC765L-03-SS	3/16
HM-LC765L-04-SS	1/4
HM-LC765L-05-SS	5/16
HM-LC765L-06-SS	3/8
HM-LC765L-08-SS	1/2
HM-LC765L-10-SS	5/8
HM-LC765L-12-SS	3/4
HM-LC765L-14-SS	7/8
HM-LC765L-16-SS	1
HM-LC765L-20-SS	1.1/4
HM-LC765L-24-SS	1.1/2
HM-LC765L-32-SS	2

## INSTRUMENTATION - connectors

### LET-LOK® type connectors

Straight metric pipe union with NPT female thread



**M766L**

code	pipe O.D. [mm]	thread size [inch]
HM-LM766L-03-02-SS	3	1/8
HM-LM766L-03-04-SS	3	1/4
HM-LM766L-04-02-SS	4	1/8
HM-LM766L-06-02-SS	6	1/8
HM-LM766L-06-04-SS	6	1/4
HM-LM766L-06-06-SS	6	3/8
HM-LM766L-06-08-SS	6	1/2
HM-LM766L-08-02-SS	8	1/8
HM-LM766L-08-04-SS	8	1/4
HM-LM766L-08-06-SS	8	3/8
HM-LM766L-08-08-SS	8	1/2
HM-LM766L-10-04-SS	10	1/4
HM-LM766L-10-06-SS	10	3/8
HM-LM766L-10-08-SS	10	1/2
HM-LM766L-12-04-SS	12	1/4
HM-LM766L-12-06-SS	12	3/8
HM-LM766L-12-08-SS	12	1/2
HM-LM766L-15-08-SS	15	1/2
HM-LM766L-16-08-SS	16	1/2
HM-LM766L-20-08-SS	20	1/2
HM-LM766L-20-12-SS	20	3/4
HM-LM766L-22-12-SS	22	3/4
HM-LM766L-22-16-SS	22	1
HM-LM766L-25-12-SS	25	3/4
HM-LM766L-25-16-SS	25	1

Straight imperial pipe union with NPT female thread



**C766L**

code	pipe O.D. [inch]	thread size [inch]
HM-LC766L-01-01-SS	1/16	1/16
HM-LC766L-01-02-SS	1/16	1/8
HM-LC766L-02-02-SS	1/8	1/8
HM-LC766L-02-04-SS	1/8	1/4
HM-LC766L-03-02-SS	3/16	1/8
HM-LC766L-04-02-SS	1/4	1/8
HM-LC766L-04-04-SS	1/4	1/4
HM-LC766L-04-06-SS	1/4	3/8
HM-LC766L-04-08-SS	1/4	1/2
HM-LC766L-05-02-SS	5/16	1/8
HM-LC766L-05-04-SS	5/16	1/4
HM-LC766L-06-02-SS	3/8	1/8
HM-LC766L-06-04-SS	3/8	1/4
HM-LC766L-06-06-SS	3/8	3/8
HM-LC766L-06-08-SS	3/8	1/2
HM-LC766L-06-12-SS	3/8	3/4
HM-LC766L-08-04-SS	1/2	1/4
HM-LC766L-08-06-SS	1/2	3/8
HM-LC766L-08-08-SS	1/2	1/2
HM-LC766L-08-12-SS	1/2	3/4
HM-LC766L-10-06-SS	5/8	3/8
HM-LC766L-10-08-SS	5/8	1/2
HM-LC766L-10-12-SS	5/8	3/4
HM-LC766L-12-08-SS	3/4	1/2
HM-LC766L-12-12-SS	3/4	3/4
HM-LC766L-14-12-SS	7/8	3/4
HM-LC766L-16-12-SS	1	3/4
HM-LC766L-16-16-SS	1	1
HM-LC766L-20-20-SS	1.1/4	1.1/4
HM-LC766L-24-24-SS	1.1/2	1.1/2
HM-LC766L-32-32-SS	2	2

## INSTRUMENTATION - connectors

### LET-LOK® type connectors

Straight metric pipe connector with NPT male thread



**M768L**

code	pipe O.D. [mm]	thread size [inch]
HM-LM768L-02-02-SS	2	1/8
HM-LM768L-03-02-SS	3	1/8
HM-LM768L-03-04-SS	3	1/4
HM-LM768L-04-02-SS	4	1/8
HM-LM768L-04-04-SS	4	1/4
HM-LM768L-06-02-SS	6	1/8
HM-LM768L-06-04-SS	6	1/4
HM-LM768L-06-06-SS	6	3/8
HM-LM768L-06-08-SS	6	1/2
HM-LM768L-08-02-SS	8	1/8
HM-LM768L-08-04-SS	8	1/4
HM-LM768L-08-06-SS	8	3/8
HM-LM768L-08-08-SS	8	1/2
HM-LM768L-10-02-SS	10	1/8
HM-LM768L-10-04-SS	10	1/4
HM-LM768L-10-06-SS	10	3/8
HM-LM768L-10-08-SS	10	1/2
HM-LM768L-10-12-SS	10	3/4
HM-LM768L-12-02-SS	12	1/8
HM-LM768L-12-04-SS	12	1/4
HM-LM768L-12-06-SS	12	3/8
HM-LM768L-12-08-SS	12	1/2
HM-LM768L-12-12-SS	12	3/4
HM-LM768L-14-04-SS	14	1/4
HM-LM768L-14-06-SS	14	3/8
HM-LM768L-14-08-SS	14	1/2
HM-LM768L-15-08-SS	15	1/2
HM-LM768L-16-06-SS	16	3/8
HM-LM768L-16-08-SS	16	1/2
HM-LM768L-16-12-SS	16	3/4
HM-LM768L-18-08-SS	18	1/2
HM-LM768L-18-12-SS	18	3/4
HM-LM768L-20-08-SS	20	1/2
HM-LM768L-20-12-SS	20	3/4
HM-LM768L-22-12-SS	22	3/4
HM-LM768L-22-16-SS	22	1
HM-LM768L-25-08-SS	25	1/2
HM-LM768L-25-12-SS	25	3/4
HM-LM768L-25-16-SS	25	1
HM-LM768L-38-24-SS	38	1.1/2
HM-LM768L-50-32-SS	50	2

Straight imperial pipe connector with NPT male thread





**C768L**

code	pipe O.D. [inch]	thread size [inch]
HM-LC768L-01-01-SS	1/16	1/16
HM-LC768L-01-02-SS	1/16	1/8
HM-LC768L-01-04-SS	1/16	1/4
HM-LC768L-02-01-SS	1/8	1/16
HM-LC768L-02-02-SS	1/8	1/8
HM-LC768L-02-04-SS	1/8	1/4
HM-LC768L-02-06-SS	1/8	3/8
HM-LC768L-02-08-SS	1/8	1/2
HM-LC768L-03-02-SS	3/16	1/8
HM-LC768L-03-04-SS	3/16	1/4
HM-LC768L-04-01-SS	1/4	1/16
HM-LC768L-04-02-SS	1/4	1/8
HM-LC768L-04-04-SS	1/4	1/4
HM-LC768L-04-06-SS	1/4	3/8
HM-LC768L-04-08-SS	1/4	1/2
HM-LC768L-04-12-SS	1/4	3/4
HM-LC768L-05-02-SS	5/16	1/8
HM-LC768L-05-04-SS	5/16	1/4
HM-LC768L-05-06-SS	5/16	3/8
HM-LC768L-06-02-SS	3/8	1/8
HM-LC768L-06-04-SS	3/8	1/4
HM-LC768L-06-06-SS	3/8	3/8
HM-LC768L-06-08-SS	3/8	1/2
HM-LC768L-06-12-SS	3/8	3/4
HM-LC768L-06-16-SS	3/8	1
HM-LC768L-08-02-SS	1/2	1/8
HM-LC768L-08-04-SS	1/2	1/4
HM-LC768L-08-06-SS	1/2	3/8
HM-LC768L-08-08-SS	1/2	1/2
HM-LC768L-08-12-SS	1/2	3/4
HM-LC768L-08-16-SS	1/2	1
HM-LC768L-10-04-SS	5/8	1/4
HM-LC768L-10-06-SS	5/8	3/8
HM-LC768L-10-08-SS	5/8	1/2
HM-LC768L-10-12-SS	5/8	3/4
HM-LC768L-12-06-SS	3/4	3/8
HM-LC768L-12-08-SS	3/4	1/2
HM-LC768L-12-12-SS	3/4	3/4
HM-LC768L-12-16-SS	3/4	1
HM-LC768L-14-08-SS	7/8	1/2
HM-LC768L-14-12-SS	7/8	3/4
HM-LC768L-14-16-SS	7/8	1
HM-LC768L-16-08-SS	1	1/2
HM-LC768L-16-12-SS	1	3/4
HM-LC768L-16-16-SS	1	1
HM-LC768L-20-16-SS	1.1/4	1
HM-LC768L-20-20-SS	1.1/4	1.1/4
HM-LC768L-24-24-SS	1.1/2	1.1/2
HM-LC768L-32-32-SS	2	2

## INSTRUMENTATION - connectors

### LET-LOK® type connectors

90° metric pipe elbow with NPT male thread		
 <b>M769L</b>		
code	pipe O.D. [mm]	thread size [inch]
HM-LM769L-03-02-SS	3	1/8
HM-LM769L-03-04-SS	3	1/4
HM-LM769L-04-02-SS	4	1/8
HM-LM769L-04-04-SS	4	1/4
HM-LM769L-06-02-SS	6	1/8
HM-LM769L-06-04-SS	6	1/4
HM-LM769L-06-06-SS	6	3/8
HM-LM769L-06-08-SS	6	1/2
HM-LM769L-08-02-SS	8	1/8
HM-LM769L-08-04-SS	8	1/4
HM-LM769L-08-06-SS	8	3/8
HM-LM769L-08-08-SS	8	1/2
HM-LM769L-10-02-SS	10	1/8
HM-LM769L-10-04-SS	10	1/4
HM-LM769L-10-06-SS	10	3/8
HM-LM769L-10-08-SS	10	1/2
HM-LM769L-12-02-SS	12	1/8
HM-LM769L-12-04-SS	12	1/4
HM-LM769L-12-06-SS	12	3/8
HM-LM769L-12-08-SS	12	1/2
HM-LM769L-12-12-SS	12	3/4
HM-LM769L-15-08-SS	15	1/2
HM-LM769L-16-06-SS	16	3/8
HM-LM769L-16-08-SS	16	1/2
HM-LM769L-16-12-SS	16	3/4
HM-LM769L-18-08-SS	18	1/2
HM-LM769L-18-12-SS	18	3/4
HM-LM769L-20-08-SS	20	1/2
HM-LM769L-20-12-SS	20	3/4
HM-LM769L-22-12-SS	22	3/4
HM-LM769L-22-16-SS	22	1
HM-LM769L-25-08-SS	25	1/2
HM-LM769L-25-12-SS	25	3/4
HM-LM769L-25-16-SS	25	1
HM-LM769L-38-24-SS	38	1.1/2

90° imperial pipe elbow with NPT male thread		
 <b>C769L</b>		
code	pipe O.D. [inch]	thread size [inch]
HM-LC769L-01-01-SS	1/16	1/16
HM-LC769L-01-02-SS	1/16	1/8
HM-LC769L-02-01-SS	1/8	1/16
HM-LC769L-02-02-SS	1/8	1/8
HM-LC769L-02-04-SS	1/8	1/4
HM-LC769L-03-02-SS	3/16	1/8
HM-LC769L-03-04-SS	3/16	1/4
HM-LC769L-04-01-SS	1/4	1/16
HM-LC769L-04-02-SS	1/4	1/8
HM-LC769L-04-04-SS	1/4	1/4
HM-LC769L-04-06-SS	1/4	3/8
HM-LC769L-04-08-SS	1/4	1/2
HM-LC769L-05-02-SS	5/16	1/8
HM-LC769L-05-04-SS	5/16	1/4
HM-LC769L-05-06-SS	5/16	3/8
HM-LC769L-06-02-SS	3/8	1/8
HM-LC769L-06-04-SS	3/8	1/4
HM-LC769L-06-06-SS	3/8	3/8
HM-LC769L-06-08-SS	3/8	1/2
HM-LC769L-06-12-SS	3/8	3/4
HM-LC769L-08-04-SS	1/2	1/4
HM-LC769L-08-06-SS	1/2	3/8
HM-LC769L-08-08-SS	1/2	1/2
HM-LC769L-08-12-SS	1/2	3/4
HM-LC769L-10-06-SS	5/8	3/8
HM-LC769L-10-08-SS	5/8	1/2
HM-LC769L-10-12-SS	5/8	3/4
HM-LC769L-12-08-SS	3/4	1/2
HM-LC769L-12-12-SS	3/4	3/4
HM-LC769L-14-12-SS	7/8	3/4
HM-LC769L-16-12-SS	1	3/4
HM-LC769L-16-16-SS	1	1
HM-LC769L-20-20-SS	1.1/4	1.1/4
HM-LC769L-24-24-SS	1.1/2	1.1/2
HM-LC769L-32-32-SS	2	2

## INSTRUMENTATION - connectors

### LET-LOK® type connectors

Metric pipe tee with NPT male thread



**M772L**

code	pipe O.D. [mm]	thread size [inch]
HM-LM772L-06-02-SS	6	1/8
HM-LM772L-06-04-SS	6	1/4
HM-LM772L-08-02-SS	8	1/8
HM-LM772L-08-04-SS	8	1/4
HM-LM772L-10-04-SS	10	1/4
HM-LM772L-12-04-SS	12	1/4
HM-LM772L-12-06-SS	12	3/8
HM-LM772L-12-08-SS	12	1/2
HM-LM772L-16-08-SS	16	1/2

Imperial pipe tee with NPT male thread



**C772L**

code	pipe O.D. [inch]	thread size [inch]
HM-LC772L-02-02-SS	1/8	1/8
HM-LC772L-02-04-SS	1/8	1/4
HM-LC772L-03-02-SS	3/16	1/8
HM-LC772L-04-02-SS	1/4	1/8
HM-LC772L-04-04-SS	1/4	1/4
HM-LC772L-05-02-SS	5/16	1/8
HM-LC772L-06-04-SS	3/8	1/4
HM-LC772L-06-06-SS	3/8	3/8
HM-LC772L-08-06-SS	1/2	3/8
HM-LC772L-08-08-SS	1/2	1/2
HM-LC772L-10-08-SS	5/8	1/2
HM-LC772L-12-12-SS	3/4	3/4

Straight bulkhead connector for metric pipes



**M774L**

code	pipe O.D. [mm]
HM-LM774L-03-SS	3
HM-LM774L-04-SS	4
HM-LM774L-06-SS	6
HM-LM774L-08-SS	8
HM-LM774L-10-SS	10
HM-LM774L-12-SS	12
HM-LM774L-14-SS	14
HM-LM774L-15-SS	15
HM-LM774L-16-SS	16
HM-LM774L-18-SS	18
HM-LM774L-20-SS	20
HM-LM774L-25-SS	25
HM-LM774L-38-SS	38

Straight bulkhead connector for imperial pipes



**C774L**

code	pipe O.D. [inch]
HM-LC774L-01-SS	1/16
HM-LC774L-02-SS	1/8
HM-LC774L-03-SS	3/16
HM-LC774L-04-SS	1/4
HM-LC774L-05-SS	5/16
HM-LC774L-06-SS	3/8
HM-LC774L-08-SS	1/2
HM-LC774L-10-SS	5/8
HM-LC774L-12-SS	3/4
HM-LC774L-16-SS	1
HM-LC774L-20-SS	1.1/4
HM-LC774L-24-SS	1.1/2
HM-LC774L-32-SS	2



## INSTRUMENTATION - connectors

### LET-LOK® type connectors

Cross for metric pipes



**M7102L**

code	pipe O.D. [mm]
HM-LM7102L-03-SS	3
HM-LM7102L-06-SS	6
HM-LM7102L-08-SS	8
HM-LM7102L-10-SS	10
HM-LM7102L-12-SS	12
HM-LM7102L-16-SS	16
HM-LM7102L-18-SS	18
HM-LM7102L-20-SS	20
HM-LM7102L-25-SS	22
HM-LM7102L-38-SS	25

Cross for imperial pipes



**C7102L**

code	pipe O.D. [inch]
HM-LC7102L-02-SS	1/8
HM-LC7102L-04-SS	1/4
HM-LC7102L-05-SS	5/16
HM-LC7102L-06-SS	3/8
HM-LC7102L-08-SS	1/2
HM-LC7102L-12-SS	3/4
HM-LC7102L-16-SS	1

Plug for metric pipe unions



**M7121L**

code	pipe O.D. [mm]
HM-LM7121L-02-SS	2
HM-LM7121L-03-SS	3
HM-LM7121L-04-SS	4
HM-LM7121L-06-SS	6
HM-LM7121L-08-SS	8
HM-LM7121L-10-SS	10
HM-LM7121L-12-SS	12
HM-LM7121L-14-SS	14
HM-LM7121L-15-SS	15
HM-LM7121L-16-SS	16
HM-LM7121L-18-SS	18
HM-LM7121L-20-SS	20
HM-LM7121L-22-SS	22
HM-LM7121L-25-SS	25
HM-LM7121L-38-SS	38
HM-LM7121L-50-SS	50

Plug for imperial pipe unions



**C7121L**

code	pipe O.D. [inch]
HM-LC7121L-01-SS	1/16
HM-LC7121L-02-SS	1/8
HM-LC7121L-03-SS	3/16
HM-LC7121L-04-SS	1/4
HM-LC7121L-05-SS	5/16
HM-LC7121L-06-SS	3/8
HM-LC7121L-08-SS	1/2
HM-LC7121L-10-SS	5/8
HM-LC7121L-12-SS	3/4
HM-LC7121L-16-SS	1
HM-LC7121L-20-SS	1.1/4
HM-LC7121L-24-SS	1.1/2
HM-LC7121L-32-SS	2

## INSTRUMENTATION - connectors

### LET-LOK® type connectors

Cap for metric pipe unions



**M7108L**

code	pipe O.D. [mm]
HM-LM7108L-02-SS	2
HM-LM7108L-03-SS	3
HM-LM7108L-04-SS	4
HM-LM7108L-06-SS	6
HM-LM7108L-08-SS	8
HM-LM7108L-10-SS	10
HM-LM7108L-12-SS	12
HM-LM7108L-14-SS	14
HM-LM7108L-15-SS	15
HM-LM7108L-16-SS	16
HM-LM7108L-18-SS	18
HM-LM7108L-20-SS	20
HM-LM7108L-22-SS	22
HM-LM7108L-25-SS	25
HM-LM7108L-38-SS	38

Cap for imperial pipe unions



**C7108L**

code	pipe O.D. [inch]
HM-LC7108L-01-SS	1/16
HM-LC7108L-02-SS	1/8
HM-LC7108L-03-SS	3/16
HM-LC7108L-04-SS	1/4
HM-LC7108L-05-SS	5/16
HM-LC7108L-06-SS	3/8
HM-LC7108L-08-SS	1/2
HM-LC7108L-10-SS	5/8
HM-LC7108L-12-SS	3/4
HM-LC7108L-16-SS	1
HM-LC7108L-20-SS	1.1/4
HM-LC7108L-24-SS	1.1/2
HM-LC7108L-32-SS	2

PN16 flange with LET-LOK® union for metric pipe



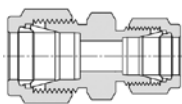
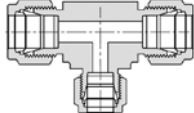
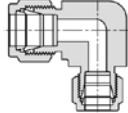
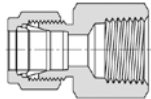
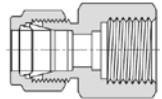
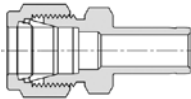
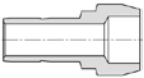

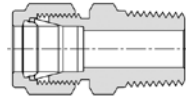
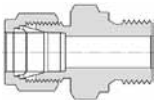
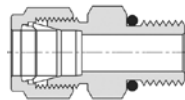
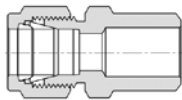
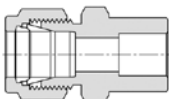
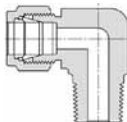
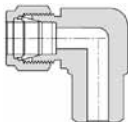
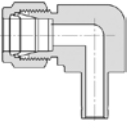
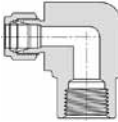
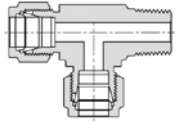
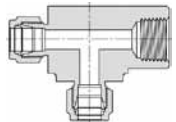
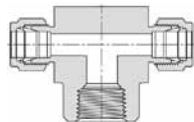
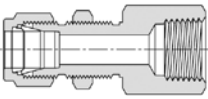
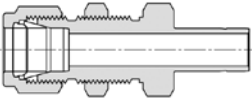
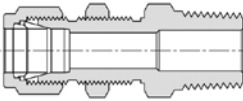
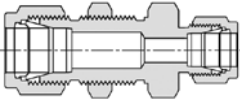
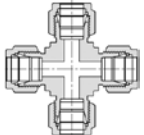
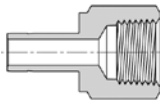
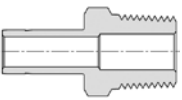
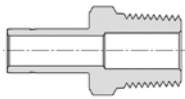
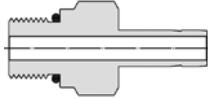
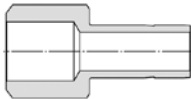
**FLN**

code	flange DN	pipe O.D. [mm]
HM-FLN-25-06-SS	25	6
HM-FLN-15-12-SS	15	12
HM-FLN-25-12-SS	25	12
HM-FLN-50-12-SS	50	12
HM-FLN-15-18-SS	15	18
HM-FLN-25-18-SS	25	18
HM-FLN-25-25-SS	25	25
HM-FLN-50-38-SS	50	38
HM-FLN-50-50-SS	50	50

## INSTRUMENTATION - connectors

### LET-LOK® type connectors

Many other elements of LET-LOK® system are also available. In order to obtain more information, please contact TUBES INTERNATIONAL® Sales or Technical Department.

Reducing connector 763L		Reducing tee 764LR		Reducing 90° elbow connector 765LR	
Straight connector BSPT female thread 766LR		Straight connector BSP female thread 766LG		Reducing adapter 767LT	
Reducing connector 767LM		Straight connector 767LP		Straight connector BSPT male thread 768LR	
Straight connector BSP male thread 768LG		Straight connector UNF male thread 768LOB		Straight connector weld-in connection 768LN	
Straight connector weld-in connection 768LW		90° elbow BSPT male thread 769LR		90° elbow weld-in connection 769LN	
Reducing 90° elbow 769LT		90° elbow NPT female thread 770L		Tee (L type) NPT male thread 771L	
Tee (L type) NPT female thread 771LF		Tee (T type) NPT female thread 772LF		Bulkhead straight connector NPT female thread 774LF	
Bulkhead reducing adapter 774LT		Bulkhead connector NPT male thread 774LM		Bulkhead reducing connector 775L	
Union cross 7102L		Adapter NPT female thread 739LF		Adapter NPT male thread 739LM	
Adapter BSPT male thread 739LMR		Adapter UNF male thread 739LMOB		Adapter weld-in connection 739LN	

## Precision pipes

Precision pipelines are used in very demanding industry sectors - in the chemical industry, petrochemical industry, power industry, nuclear power plants and process engineering. They work in high pressure conditions, vacuum, vibrations and high temperatures. It is crucial for precision pipelines to be reliable. The precision pipelines are made of high quality pipes connected by twin ferrule connectors (LET-LOK® connectors).

The pipes used in the pipelines must meet the specific requirements. The most important criteria are given below:

- the coupling and the pipe must be made of the same material, here the pipes and LET-LOK® connectors should be made of AISI 316 / AISI 316L steel. Each material features different physical properties, therefore two different materials may affect the quality of connection.
- seamless pipes should be used, compliant with the requirements of ASTM A213, ASTM A269 or similar standards.
- hardness must be lower than the hardness of material the connectors are made of and must not exceed 80 HRB;
- pipe surface should be clean from dirt, scratches, dents;
- cross-section of the pipe must be perfectly circular, oval or flattened pipes may affect the quality of connection as the pipes will not fit the coupling;
- it is recommended to use pipes with wall thickness parameters given in the tables below. If the wall is too thin, it can collapse during installation, if it is too thick, the ferrule can be mounted on the pipe incorrectly.

### Working pressure correction factor for pipes depending on temperature:

temperature	93°C	204°C	316°C	427°C	538°C	649°C
factor (AISI 316 steel)	1	0.96	0.85	0.79	0.76	0.37



## HPS type

Seamless precision pipes made of cold-rolled austenitic stainless steel.

**Material:** AISI 316L (1.4435). Dimensions and tolerances acc. to ASTM A213-AW

**Length:** 6 m (can be cut into 2 or 3 m sections) Coiled pipes are also available (coiled tube)

code	O.D. [inch]	O.D. [mm]	wall thickness [mm]	I.D. [mm]	theoretical press. [bar]		weight [kg/m]
					EN 13480-3 2012	ASME B31.3 2012	
imperial size							
HR-HPS1-01,59X0,36	1/16	1.59	0.36	0.87	694	662	0.011
HR-HPS1-01,59X0,51	1/16	1.59	0.51	0.57	1008	961	0.014
HR-HPS1-03,18X0,71	1/8	3.18	0.71	1.76	684	652	0.044
HR-HPS1-03,18X0,89	1/8	3.18	0.89	1.39	874	834	0.051
HR-HPS1-06,35X0,71	1/4	6.35	0.71	4.93	323	301	0.100
HR-HPS1-06,35X0,89	1/4	6.35	0.89	4.57	417	386	0.122
HR-HPS1-06,35X1,24	1/4	6.35	1.24	3.87	616	562	0.159
HR-HPS1-06,35X1,65	1/4	6.35	1.65	3.05	807	770	0.194
HR-HPS1-09,53X0,89	3/8	9.53	0.89	7.75	265	248	0.193
HR-HPS1-09,53X1,24	3/8	9.53	1.24	7.05	383	356	0.257
HR-HPS1-09,53X1,65	3/8	9.53	1.65	7.01	534	490	0.326
HR-HPS1-09,53X2,11	3/8	9.53	2.11	5.31	678	646	0.391
HR-HPS1-12,7X0,89	1/2	12.70	0.89	10.92	194	183	0.263
HR-HPS1-12,7X1,24	1/2	12.70	1.24	10.22	278	260	0.356
HR-HPS1-12,7X1,65	1/2	12.70	1.65	9.40	383	355	0.456

## INSTRUMENTATION - connectors

### Precision pipes - HPS type (table follow up)

code	O.D. [inch]	O.D. [mm]	wall thickness [mm]	I.D. [mm]	theoretical press. [bar]		weight [kg/m]
					EN 13480-3 2012	ASME B31.3 2012	
imperial size							
HR-HPS1-12,7X2,11	1/2	12.70	2.11	8.48	508	468	0.559
HR-HPS1-15,88X1,22	5/8	15.88	1.22	13.44	214	201	0.448
HR-HPS1-15,88X1,65	5/8	15.88	1.65	12.58	298	278	0.588
HR-HPS1-19,05X1,24	3/4	19.05	1.24	16.57	180	169	0.553
HR-HPS1-19,05X1,65	3/4	19.05	1.65	15.75	244	229	0.718
HR-HPS1-19,05X2,11	3/4	19.05	2.11	14.83	320	298	0.895
HR-HPS1-19,05X2,77	3/4	19.05	2.77	13.51	435	403	1.130
HR-HPS1-25,4X1,24	1	25.4	1.24	22.92	132	125	0.750
HR-HPS1-25,4X1,65	1	25.4	1.65	22.10	179	169	0.981
HR-HPS1-25,4X2,11	1	25.4	2.11	21.18	233	219	1.230
HR-HPS1-25,4X3,2	1	25.40	3.20	19.00	370	343	1.780
metric size							
HR-HPS-03X0,7	-	3	0.7	1.6	718	684	0.04
HR-HPS-06X1,0	-	6	1	4	510	470	0.13
HR-HPS-06X1,5	-	6	1.5	3	774	738	0.17
HR-HPS-08X1,0	-	8	1	6	366	340	0.18
HR-HPS-08X1,5	-	8	1.5	5	587	537	0.24
HR-HPS-08X2,0	-	8	2	4	635	577	0.30
HR-HPS-10X1,0	-	10	1	8	286	267	0.23
HR-HPS-10X1,5	-	10	1.5	7	451	417	0.32
HR-HPS-10X2,0	-	10	2.0	6	635	577	0.40
HR-HPS-12X1,0	-	12	1	10	234	220	0.28
HR-HPS-12X1,5	-	12	1.5	9	366	340	0.39
HR-HPS-12X2,0	-	12	2.0	8	510	470	0.50
HR-HPS-14X2,0	-	14	2.0	10	426	395	0.60
HR-HPS-15X1,5	-	15	1.5	12	286	267	0.51
HR-HPS-15X2,0	-	15	2.0	11	394	366	0.65
HR-HPS-16X1,0	-	16	1.0	14	172	162	0.38
HR-HPS-16X2,0	-	16	2.0	12	366	340	0.70
HR-HPS-18X1,5	-	18	1.5	15	234	220	0.62
HR-HPS-18X2,0	-	18	2.0	14	321	299	0.80
HR-HPS-20X1,5	-	20	1.5	17	209	196	0.69
HR-HPS-20X2,0	-	20	2.0	16	286	267	0.90
HR-HPS-20X2,5	-	20	2.5	15	366	340	1.06
HR-HPS-25X2,0	-	25	2.0	21	224	210	1.15
HR-HPS-25X2,5	-	25	2.5	20	286	267	1.41
HR-HPS-25X3,0	-	25	3.0	19	350	326	1.65

# INSTRUMENTATION - connectors

## Threaded connectors

Threaded connectors, like LET-LOK® connectors, are designed primarily for chemical, petrochemical, pharmaceutical and power industry, nuclear power plants and process engineering. Made of AISI 316 stainless steel and brass with NPT threads from 1/16" up to 2".

### Maximum working pressure [bar] for connectors with NPT and BSP(T) threads

thread size [inch]	AISI 316		brass	
	male thread	female thread	male thread	female thread
1/16	759	462	379	228
1/8	690	448	345	221
1/4	552	455	276	228
3/8	538	366	269	179
1/2	531	338	262	165
3/4	503	317	248	159
1	366	303	179	152
1.1/4	414	345	207	172
1.1/2	345	317	172	159
2	269	269	131	131

90° elbow with NPT female thread



**100H**

code	thread size [inch]
HM-P100H-02-SS	1/8
HM-P100H-04-SS	1/4
HM-P100H-06-SS	3/8
HM-P100H-08-SS	1/2
HM-P100H-12-SS	3/4
HM-P100H-16-SS	1

90° elbow with NPT male thread



**100HM**

code	thread size [inch]
HM-P100HM-02-SS	1/8
HM-P100HM-04-SS	1/4
HM-P100HM-06-SS	3/8
HM-P100HM-08-SS	1/2

Tee with NPT female thread



**101H**

code	thread size [inch]
HM-P101H-02-SS	1/8
HM-P101H-04-SS	1/4
HM-P101H-06-SS	3/8
HM-P101H-08-SS	1/2
HM-P101H-12-SS	3/4
HM-P101H-16-SS	1

Tee with NPT male thread



**101HM**

code	thread size [inch]
HM-P101HM-02-SS	1/8
HM-P101HM-04-SS	1/4
HM-P101HM-06-SS	3/8
HM-P101HM-08-SS	1/2

# INSTRUMENTATION - connectors

## Threaded connectors

Cross with NPT female thread



**102H**

code	thread size [inch]
HM-P102H-02-SS	1/8
HM-P102H-04-SS	1/4
HM-P102H-06-SS	3/8
HM-P102H-08-SS	1/2
HM-P102H-12-SS	3/4
HM-P102H-16-SS	1

Reducing connector with NPT female thread



**119H**

code	thread size [inch]	thread size [inch]
HM-P119H-04-02-SS	1/4	1/8
HM-P119H-06-04-SS	3/8	1/4
HM-P119H-08-02-SS	1/2	1/8
HM-P119H-08-04-SS	1/2	1/4
HM-P119H-08-06-SS	1/2	3/8
HM-P119H-12-04-SS	3/4	1/4
HM-P119H-12-08-SS	3/4	1/2
HM-P119H-16-08-SS	1	1/2
HM-P119H-16-12-SS	1	3/4

Cap with NPT female thread



**108H**

code	thread size [inch]
HM-P108H-02-SS	1/8
HM-P108H-04-SS	1/4
HM-P108H-06-SS	3/8
HM-P108H-08-SS	1/2
HM-P108H-12-SS	3/4
HM-P108H-16-SS	1

90° reducing elbow with NPT thread (female / male)



**116H**

code	female thread size [inch]	male thread size [inch]
HM-P116H-01-01-SS	1/16	1/16
HM-P116H-02-01-SS	1/8	1/16
HM-P116H-02-02-SS	1/8	1/8
HM-P116H-04-02-SS	1/4	1/8
HM-P116H-04-04-SS	1/4	1/4
HM-P116H-06-04-SS	3/8	1/4
HM-P116H-06-06-SS	3/8	3/8
HM-P116H-08-04-SS	1/2	1/4
HM-P116H-08-06-SS	1/2	3/8
HM-P116H-08-08-SS	1/2	1/2
HM-P116H-12-12-SS	3/4	3/4
HM-P116H-16-16-SS	1	1

Connector with NPT female thread



**103H**

code	thread size [inch]
HM-P103H-02-SS	1/8
HM-P103H-04-SS	1/4
HM-P103H-06-SS	3/8
HM-P103H-08-SS	1/2
HM-P103H-12-SS	3/4
HM-P103H-16-SS	1

Plug with NPT male thread



**107H**

code	thread size [inch]
HM-P107H-04-SS	1/4
HM-P107H-06-SS	3/8
HM-P107H-08-SS	1/2

# INSTRUMENTATION - connectors

## Threaded connectors

Reducing connector NPT thread (male / female)



**110H**

code	male thread size [inch]	female thread size [inch]
HM-P110H-02-01-SS	1/8	1/16
HM-P110H-04-02-SS	1/4	1/8
HM-P110H-06-02-SS	3/8	1/8
HM-P110H-06-04-SS	3/8	1/4
HM-P110H-08-02-SS	1/2	1/8
HM-P110H-08-04-SS	1/2	1/4
HM-P110H-08-06-SS	1/2	3/8
HM-P110H-12-04-SS	3/4	1/4
HM-P110H-12-06-SS	3/4	3/8
HM-P110H-12-08-SS	3/4	1/2
HM-P110H-16-04-SS	1	1/4
HM-P110H-16-06-SS	1	3/8
HM-P110H-16-08-SS	1	1/2
HM-P110H-16-12-SS	1	3/4
HM-P110H-20-08-SS	1.1/4	1/2
HM-P110H-20-12-SS	1.1/4	3/4
HM-P110H-20-16-SS	1.1/4	1
HM-P110H-24-08-SS	1.1/2	1/2
HM-P110H-24-12-SS	1.1/2	3/4
HM-P110H-24-16-SS	1.1/2	1
HM-P110H-24-20-SS	1.1/2	1.1/4
HM-P110H-32-08-SS	2	1/2
HM-P110H-32-12-SS	2	3/4
HM-P110H-32-16-SS	2	1
HM-P110H-32-20-SS	2	1.1/4
HM-P110H-32-24-SS	2	1.1/2

Reducing connector NPT thread (female / male)



**120H**

code	female thread size [inch]	male thread size [inch]
HM-P120H-02-01-SS	1/8	1/16
HM-P120H-02-02-SS	1/8	1/8
HM-P120H-04-02-SS	1/4	1/8
HM-P120H-04-04-SS	1/4	1/4
HM-P120H-06-02-SS	3/8	1/8
HM-P120H-06-04-SS	3/8	1/4
HM-P120H-06-06-SS	3/8	3/8
HM-P120H-08-02-SS	1/2	1/8
HM-P120H-08-04-SS	1/2	1/4
HM-P120H-08-06-SS	1/2	3/8
HM-P120H-08-08-SS	1/2	1/2
HM-P120H-12-04-SS	3/4	1/4
HM-P120H-12-06-SS	3/4	3/8
HM-P120H-12-08-SS	3/4	1/2
HM-P120H-12-12-SS	3/4	3/4
HM-P120H-16-04-SS	1	1/4
HM-P120H-16-08-SS	1	1/2
HM-P120H-16-12-SS	1	3/4
HM-P120H-16-16-SS	1	1

Connector with NPT male thread / BSP female thread



**120HGN**

code	male thread size [inch]	female thread size [inch]
HM-P120HGN-04-04-SS	1/4	1/4
HM-P120HGN-06-06-SS	3/8	3/8
HM-P120HGN-08-08-SS	1/2	1/2

Connector with BSP male thread / NPT female thread



**120HNG**

code	male thread size [inch]	female thread size [inch]
HM-P120HNG-02-02-SS	1/8	1/8
HM-P120HNG-04-04-SS	1/4	1/4
HM-P120HNG-06-06-SS	3/8	3/8
HM-P120HNG-08-08-SS	1/2	1/2
HM-P120HNG-12-12-SS	3/4	3/4
HM-P120HNG-16-16-SS	1	1



# INSTRUMENTATION - connectors

## Threaded connectors

Connector with BSPT male thread / NPT female thread



**120HNR**

code	male thread size [inch]	female thread size [inch]
HM-P120HNR-02-02-SS	1/8	1/8
HM-P120HNR-04-04-SS	1/4	1/4
HM-P120HNR-06-06-SS	3/8	3/8
HM-P120HNR-08-08-SS	1/2	1/2
HM-P120HNR-12-12-SS	3/4	3/4
HM-P120HNR-16-16-SS	1	1

Connector with NPT male thread / BSPT female thread



**120HRN**

code	male thread size [inch]	female thread size [inch]
HM-P120HRN-02-02-SS	1/8	1/8
HM-P120HRN-04-04-SS	1/4	1/4
HM-P120HRN-06-06-SS	3/8	3/8
HM-P120HRN-08-08-SS	1/2	1/2
HM-P120HRN-12-12-SS	3/4	3/4
HM-P120HRN-16-16-SS	1	1

Connector with NPT male thread / BSP male thread



**122HNG**

code	thread size [inch]
HM-P122HNG-02-SS	1/8
HM-P122HNG-04-SS	1/4
HM-P122HNG-06-SS	3/8
HM-P122HNG-08-SS	1/2
HM-P122HNG-12-SS	3/4
HM-P122HNG-16-SS	1

Connector with NPT male thread / BSPT male thread



**122HNR**

code	thread size [inch]
HM-P122HNR-02-SS	1/8
HM-P122HNR-04-SS	1/4
HM-P122HNR-06-SS	3/8
HM-P122HNR-08-SS	1/2
HM-P122HNR-12-SS	3/4
HM-P122HNR-16-SS	1

Connector with NPT male thread



**122H**

code	thread size [inch]
HM-P122H-01-SS	1/16
HM-P122H-02-SS	1/8
HM-P122H-04-SS	1/4
HM-P122H-06-SS	3/8
HM-P122H-08-SS	1/2
HM-P122H-12-SS	3/4
HM-P122H-16-SS	1

Reducing connector with NPT male thread



**123H**

code	male thread size [inch]	male thread size [inch]
HM-P123H-02-01-SS	1/8	1/16
HM-P123H-04-02-SS	1/4	1/8
HM-P123H-06-02-SS	3/8	1/8
HM-P123H-06-04-SS	3/8	1/4
HM-P123H-08-02-SS	1/2	1/8
HM-P123H-08-04-SS	1/2	1/4
HM-P123H-08-06-SS	1/2	3/8
HM-P123H-12-04-SS	3/4	1/4
HM-P123H-12-08-SS	3/4	1/2
HM-P123H-16-08-SS	1	1/2
HM-P123H-16-12-SS	1	3/4

# INSTRUMENTATION - connectors

## Threaded connectors

Branch tee with NPT thread (female / male)



**3600H**

code	thread size [inch]
HM-P3600H-02-SS	1/8
HM-P3600H-04-SS	1/4
HM-P3600H-06-SS	3/8
HM-P3600H-08-SS	1/2

Street tee with NPT thread (female / male)



**3750H**

code	thread size [inch]
HM-P3750H-02-SS	1/8
HM-P3750H-04-SS	1/4
HM-P3750H-06-SS	3/8
HM-P3750H-08-SS	1/2

Connector male / female NPT thread 104H		Blank plug NPT male thread 121H		Blank plug UNF male thread 107HOB	
Blank plug UNF male thread 121HOB		Reducing connector male / female UNF thread 110HOB		Connector NPT female thread / UNF male thread 120HNOB	
Straight long connector NPT male thread 113H		Straight connector NPT / UNF male thread 122HNOB		Straight connector NPT male thread 122HCN	
Fitting NPT female thread 130HF		Fitting NPT male thread 130HM		Pipe fitting with hose tail 130LT	

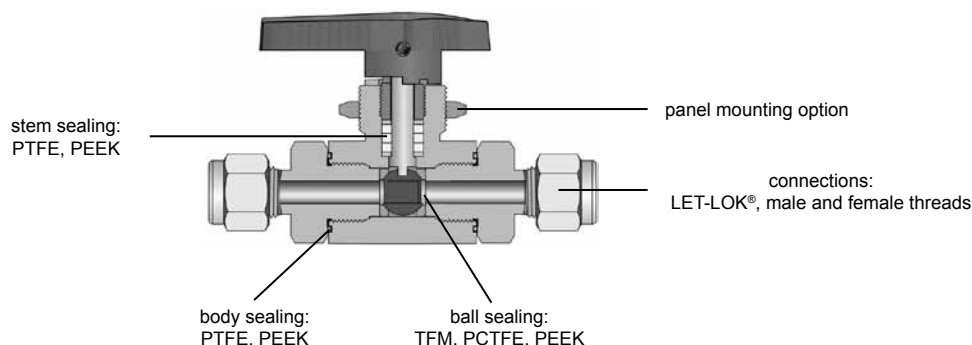
## INSTRUMENTATION - valves

Top grade, precision valves of different types (ball, needle, check valves and many other) used in control and measuring equipment for chemical, petrochemical, pharmaceutical and power industry, nuclear power plants and process engineering. Available in many different versions depending on working temperature, pressure and connection size. Made of AISI 316 stainless steel as a standard.

### Ball valves

Ball valves are used to fully open or close the flow path. Should not be used in the intermediate position.

**The construction of ball valve (on the example of H-6800 series valve):**



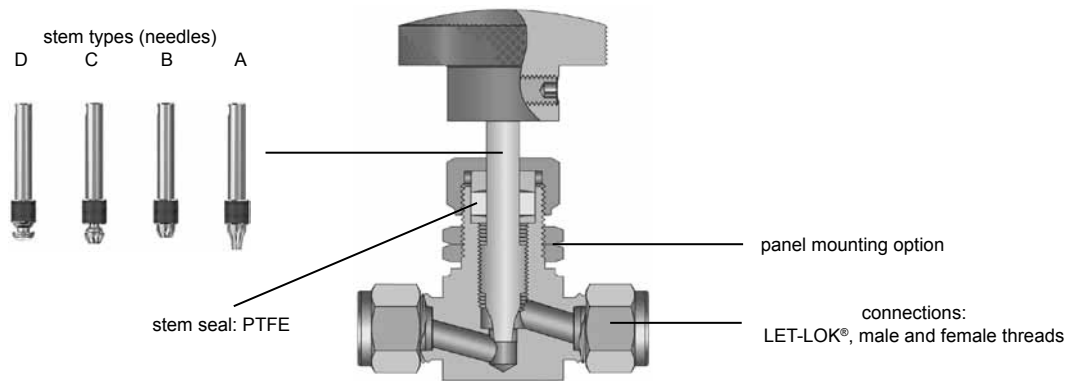
**Types of main seals (ball) used in ball valves:**

material	valve type	working temperature range	characteristics and seals applications
TFM®1600	H-6800	from -34°C up to +210°C	Modified PTFE with the same chemical resistance, but with better pressure characteristics. Compared to standard PTFE, it undergoes less deformation under pressure load and has greater ability to regain its original shape once the pressure load is removed.
	H-500	from -28°C up to +204°C	
	H-700	from -34°C up to +204°C	
PCTFE	H-6800	from -40°C up to +140°C	Modified PTFE with the same chemical resistance. Recommended for low temperature applications e.g. nitrogen or oxygen.
PEEK	H-6800	from -34°C up to +260°C	Very good resistance to chemicals and hydrolysis, very high mechanical strength and dimensional stability. Retains rigidity and shape in its working temperature range.
	H-500	from -28°C up to +232°C	
PFA	H-800	from -54°C up to -149°C	Modified PTFE with the same chemical and temperature resistance, but with better mechanical properties.
PTFE	H-500	from -28°C up to +186°C	Very good resistance to chemicals, aging, hydrolysis and weather conditions. Low coefficient of friction. Perfect sealing material for general purpose application.
SS PTFE	H-500	from -28°C up to +232°C	PTFE filled with stainless steel powder. It has better temperature and pressures properties, lower deformation factor with the same chemical resistance as standard PTFE.
UPE	H-500	from -28°C up to +122°C	Very good chemical resistance, low coefficient of friction. It is used mainly in the tobacco industry.

### Needle valves

Needle valves (depending on the type of a valve and stem) may be used to fully open and close the flow path, to regulate the flow rate or to dose the media.

**The construction of needle valve (on the example of H-300 series valve):**



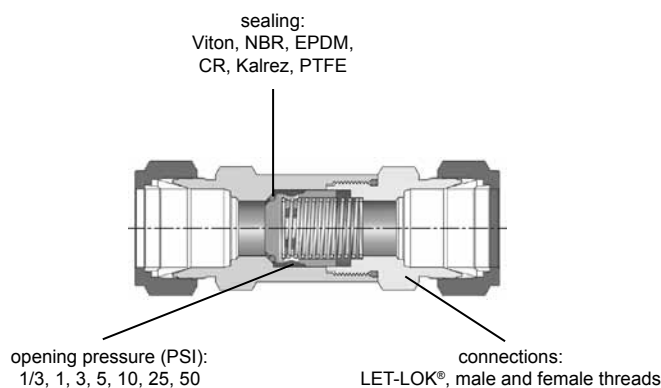
Four types of stems used in H-300 series needle valves:

- A - regulating stem,
- B - standard V-stem type, close-open valve position,
- C - with non-rotating stem, reduces friction, recommended for high pressure gases and large number of cycles,
- D - with non-rotating stem with soft removable seal, assures lower torque when tightening, recommended for high pressure gases of high purity.

### Check, release and excess flow valves

Check valves open flow in one direction at the set difference between pressure values. Release valves (overflow) open the flow when pressure in the system rises above the set value. Excess flow valves close the flow if pressure drops behind the valve, when e.g. installation bursts. All these valves are equipped with springs calibrated for a defined pressure value.

**The construction of check valve (on the example of H-400 series valve):**



## INSTRUMENTATION - valves



### Ball valve H-6800 type

**Body material:** AISI 316  
**Ball material:** AISI 316  
**Ball seal:** TFM®1600 (PCTFE, PEEK - option)  
**Working temp.:** TFM®1600 - up to +210°C  
                           PCTFE - up to +140°C  
                           PEEK - up to +260°C  
**Working press.:** TFM®1600 - up to 206 bar  
                           PCTFE, PEEK - up to 410 bar  
**Connection:** LET-LOK® type connectors,  
                           NPT, BSPT, BSP threads

High pressure two-way ball valve designed to be assembled in an installation or for panel mounting. Lever made of Nylon (black as standard, blue, red, green and yellow and metal lever available on request). ISLT version equipped with a padlock used to lock the position of the lever. Available also as a two-way 90 version or three-way version (bottom inlet). Pneumatic control available on request. All valves are pressure tested before shipment.

code	connection size	flow diameter [mm]	seal	length [mm]	body material
LET-LOK® metric connectors					
HM-H6800-SS-LM-03-PSS	3 mm	2.4	TFM®1600	78.6	AISI 316
HM-H6800-SS-LM-06-PSS	6 mm	4.8		83.6	
HM-H6800-SS-LM-08-PSS	8 mm	4.8		84.8	
HM-H6800-SS-LM-10-PSS	10 mm	4.8		86.4	
HM-H6800-SS-LM-12-PSS	12 mm	10.3		102.5	
HM-H6800-SS-LM-18-PSS	18 mm	10.3		102.5	
LET-LOK® imperial connectors					
HM-H6800-SS-LC-01-PSS	1/16"	1.3	TFM®1600	70.2	AISI 316
HM-H6800-SS-LC-02-PSS	1/8"	2.4		78.6	
HM-H6800-SS-LC-04-PSS	1/4"	4.8		83.6	
HM-H6800-SS-LC-06-PSS	3/8"	4.8		86.3	
HM-H6800-SS-LC-08-PSS	1/2"	10.3		102.5	
HM-H6800-SS-LC-12-PSS	3/4"	10.3		102.5	
NPT female thread					
HM-H6810-SS-N-02-PSS	1/8"	4.8	TFM®1600	63.6	AISI 316
HM-H6810-SS-N-04-PSS	1/4"	4.8		63.6	
HM-H6810-SS-N-06-PSS	3/8"	4.8		69.6	
HM-H6810-SS-N-08-PSS	1/2"	10.3		87.4	
HM-H6810-SS-N-12-PSS	3/4"	10.3		91	
BSPT female thread					
HM-H6810-SS-R-02-PSS	1/8"	4.8	TFM®1600	63.6	AISI 316
HM-H6810-SS-R-04-PSS	1/4"	4.8		63.6	
HM-H6810-SS-R-06-PSS	3/8"	4.8		69.6	
HM-H6810-SS-R-08-PSS	1/2"	10.3		87.4	
HM-H6810-SS-R-12-PSS	3/4"	10.3		91	
NPT male thread					
HM-H6880-SS-N-02-PSS	1/8"	4.8	TFM®1600	67.6	AISI 316
HM-H6880-SS-N-04-PSS	1/4"	4.8		76.6	
HM-H6880-SS-N-06-PSS	3/8"	4.8		76.6	
HM-H6880-SS-N-08-PSS	1/2"	10.3		92.4	
HM-H6880-SS-N-12-PSS	3/4"	10.3		94.4	

## INSTRUMENTATION - valves



### Ball valve H-800 type

**Body material:** AISI 316  
**Ball material:** AISI 316  
**Ball seal:** PTFE  
**Working temp.:** From -54°C up to +150°C  
**Working press.:** Up to 206 bar  
**Connection:** LET-LOK® type connectors, NPT, BSPT, BSP threads

Highest quality, middle pressure, one piece, two-way ball valve designed to be mounted in an installation or for panel mounting. It has virtually no dead space which is one distinctive but not the only advantage. The valve is very compact, available in three body size versions: „S“, „M“ and „L“. A lever made of Nylon (black as standard; blue, red, green, yellow and metal lever available on request). ISLT version is equipped with a padlock used to lock the position of the lever. Available also as a two-way angle version or three-way version (bottom inlet) designed for diverting only. Pneumatic control available on request. All valves are pressure tested before shipment.

code	connection size	flow diameter [mm]	seal	length [mm]	body material
LET-LOK® metric connectors					
HM-H800S-SS-LM-03	3 mm	2.4	PTFE	51.1	AISI 316
HM-H800S-SS-LM-06	6 mm	3.2		56.1	
HM-H800M-SS-LM-06	6 mm	4.8		60.7	
HM-H800M-SS-LM-08	8 mm	4.8		62.5	
HM-H800L-SS-LM-10	10 mm	7.1		78.0	
HM-H800L-SS-LM-12	12 mm	7.1		83.1	
LET-LOK® imperial connectors					
HM-H800S-SS-LC-01	1/16"	1.3	PTFE	42.7	AISI 316
HM-H800S-SS-LC-02	1/8"	2.4		51.1	
HM-H800S-SS-LC-04	1/4"	3.2		56.1	
HM-H800M-SS-LC-04	1/4"	4.8		60.7	
HM-H800M-SS-LC-06	3/8"	4.8		65.5	
HM-H800L-SS-LC-06	3/8"	7.1		77.5	
HM-H800L-SS-LC-08	1/2"	7.1		83.1	
NPT female thread					
HM-H810S-SS-N-02	1/8"	3.2	PTFE	41.4	AISI 316
HM-H810M-SS-N-02	1/8"	4.8		50.8	
HM-H810M-SS-N-04	1/4"	4.8		52.3	
HM-H810L-SS-N-04	1/4"	7.1		63.5	
HM-H810L-SS-N-06	3/8"	7.1		63.5	
BSP female thread					
HM-H810S-SS-G-02	1/8"	3.2	PTFE	41.4	AISI 316
HM-H810M-SS-G-02	1/8"	4.8		50.8	
HM-H810M-SS-G-04	1/4"	4.8		52.3	
HM-H810L-SS-G-04	1/4"	7.1		63.5	
HM-H810L-SS-G-06	3/8"	7.1		63.5	

## INSTRUMENTATION - valves



### Ball valve H-700 type

**Body material:** AISI 316  
**Ball material:** AISI 316  
**Ball seal:** TFM®1600  
**Working temp.:** Up to +204°C  
**Working press.:** Up to 135 bar  
**Connection:** LET-LOK® type connectors, NPT, BSPT, BSP thread

Middle pressure two-way ball valve for general purpose application. Features compact construction, relatively high flow rate, low torque and long service life. Standard lever with position blocking system. Available with butterfly lever as well. All valves are pressure tested before shipment.

code	connection size	flow diameter [mm]	seal	length [mm]	body material
LET-LOK® metric connectors					
HM-H700-SS-LM-06-TLD	6 mm	5	TFM®1600	90	AISI 316
HM-H700-SS-LM-08-TLD	8 mm	7		90	
HM-H700-SS-LM-10-TLD	10 mm	9.2		95.3	
HM-H700-SS-LM-12-TLD	12 mm	12.5		113.4	
HM-H700-SS-LM-25-TLD	25 mm	15		129.6	
LET-LOK® imperial connectors					
HM-H700-SS-LC-04-TLD	1/4"	5	TFM®1600	90	AISI 316
HM-H700-SS-LC-06-TLD	3/8"	7		90	
HM-H700-SS-LC-08-TLD	1/2"	9.2		95.3	
HM-H700-SS-LC-12-TLD	3/4"	12.5		113.4	
HM-H700-SS-LC-16-TLD	1"	15		129.6	
NPT female thread					
HM-H710-SS-N-04-TLD	1/4"	5	TFM®1600	50	AISI 316
HM-H710-SS-N-06-TLD	3/8"	7		60	
HM-H710-SS-N-08-TLD	1/2"	9		75	
NPT male thread					
HM-H780-SS-N-04-TLD	1/4"	5	TFM®1600	50.3	AISI 316
HM-H780-SS-N-06-TLD	3/8"	7		62.2	
HM-H780-SS-N-08-TLD	1/2"	9.2		74.9	
NPT male thread / LET-LOK® imperial connectors					
HM-H795-SS-LCN-04-04-TLD	1/4"	5	TFM®1600	70.15	AISI 316
HM-H795-SS-LCN-06-06-TLD	3/8"	7		82.3	
HM-H795-SS-LCN-08-08-TLD	1/2"	9.2		85.1	

### Other ball valves

#### H-500



Middle pressure 2-way 3-piece ball valve for general purpose application, made of AISI 316 steel. Sizes from 1/4" up to 1" with LET-LOK®, threaded connectors and welding ends. Working pressure up to 204 bar. Working temperature up to +232°C.

## INSTRUMENTATION - valves



### Check valve H-400 type

**Body material:** AISI 316 (brass - option)  
**Seal:** O-ring Viton (NBR, EPDM, CR, Kalrez, PTFE - option)  
**Working temp.:** From -23°C up to +190°C (Viton)  
**Working press.:** Up to 206 bar  
**Connection:** LET-LOK® connectors, NPT, BSPT, BSP thread

Check valve designed for instrumentation applications. Closed as a rule, the valve opens when the pressure difference between inlet and outlet is higher than the valve opening pressure (depending on a spring applied). The valves are set with one of the opening pressure values: 1/3 PSI (0.02 bar), 1 PSI (0.06 bar), 10 PSI (0.68 bar), 25 PSI (1.7 bar) or 50 PSI (3.4 bar). H-400 series comprises 5 groups of valves: basic H-400, high pressure H-400HP (up to 410 bar), one-piece H-400OP, H-400OPA and H-400A with adjustable opening pressure. All valves are pressure tested before shipment.

code	connection size	nominal opening pressure	seal	length [mm]	body material
LET-LOK® metric connections					
HM-H400-SS-LM-06-0.33	6 mm	1/3 PSI (0.02 bar)	Viton	60.5	AISI 316
HM-H400-SS-LM-10-0.33	10 mm			64	
HM-H400-SS-LM-12-0.33	12 mm			77	
LET-LOK® imperial connections					
HM-H400-SS-LC-02-0.33	1/8"	1/3 PSI (0.02 bar)	Viton	56	AISI 316
HM-H400-SS-LC-04-0.33	1/4"			60.5	
HM-H400-SS-LC-06-0.33	3/8"			63.5	
HM-H400-SS-LC-08-0.33	1/2"			77	
HM-H400-SS-LC-12-0.33	3/4"			88.5	
HM-H400-SS-LC-16-0.33	1"			120	
NPT female thread					
HM-H410-SS-N-02-0.33	1/8"	1/3 PSI (0.02 bar)	Viton	44	AISI 316
HM-H410-SS-N-04-0.33	1/4"			52.5	
HM-H410-SS-N-06-0.33	3/8"			51.5	
HM-H410-SS-N-08-0.33	1/2"			76.5	
HM-H410-SS-N-12-0.33	3/4"			86	
HM-H410-SS-N-16-0.33	1"			107	

#### Other check valves

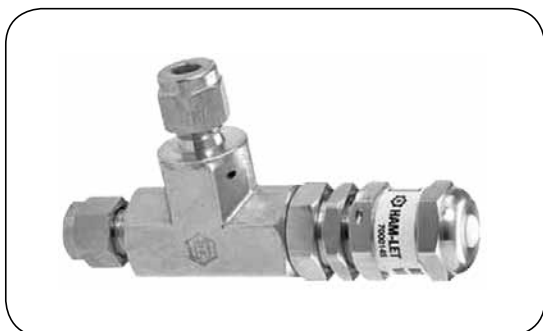
##### H-911



High pressure emergency excess flow valve. Sizes from 1/8" to 1/2". With LET-LOK® connectors and threaded connections. Working pressure up to 410 bar. Working temperature up to +204°C.



## INSTRUMENTATION - valves



### Relief valve H-900, H-900HP type

**Body material:** AISI 316 steel  
**Seal:** O-ring (Viton, NBR, EPDM, CR)  
**Working temp.:** From -40°C up to +148°C (Viton)  
**Working press.:** Up to 414 bar  
**Connection:** LET-LOK® connectors, NPT, BSPT, BSP thread

Top quality, high pressure relief valve for general purpose application, available in one size, 1/4. There are two version of the valve, one is for low pressure (working pressure: 15.5 bar) and the other for high pressure HP (working pressure 414 bar) in 8 pressure range options for fully open mode. The valve is marked with the colour of a spring and label on the valve in different way for each pressure range option (from A to H). The colour-coding helps to identify the valve's opening pressure range.

code	connection size	max. working pressure [bar]	opening pressure range [bar]	seal	body material
LET-LOK® metric connections					
HM-H900-SS-LM-06-V	6 mm	15.5	0.7 ÷ 15.5	Viton	AISI 316
HM-H900HP-SS-LM-06-AV*	6 mm	414	3.4 ÷ 24		
LET-LOK® imperial connections					
HM-H900-SS-LC-04-V	1/4"	15.5	0.7 ÷ 15.5	Viton	AISI 316
HM-H900HP-SS-LC-06-AV*	1/4"	414	3.4 ÷ 24		
male / female NPT thread					
HM-H985-SS-N-04-V	1/4"	15.5	0.7 ÷ 15.5	Viton	AISI 316
HM-H985HP-SS-N-06-AV*	1/4"	414	3.4 ÷ 24		

\* - for different opening pressure, change A for one of the letters from B to H, according to the table below:

pressure [bar]	spring marking	spring colour
3.4 ÷ 24	A	white
24 ÷ 51.5	B	blue
51.5 ÷ 103	C	gold
103 ÷ 155	D	turquoise
155 ÷ 206	E	green
206 ÷ 275	F	red
275 ÷ 344	G	silver
344 ÷ 413	H	black

## INSTRUMENTATION - valves



### Needle valve H-99 type

<b>Body material:</b>	AISI 316
<b>Stem material:</b>	AISI 316
<b>Valve seal:</b>	Metal / metal (AISI 316)
<b>Throttle seal:</b>	PTFE, PEEK, GRAFOIL
<b>Working temp.:</b>	Up to +204°C (PTFE) Up to +260°C (PEEK) Up to +648°C (GRAFOIL)
<b>Working press.:</b>	Up to 690 bar
<b>Connection:</b>	LET-LOK® connectors, NPT, BSPT, BSP threads, welding ends

High pressure needle valve designed to be assembled in an installation or for panel mounting. Used mainly in heavy duty conditions, for taking samples, shutting off the flow and testing equipment. As a standard equipped with V-type stem (close-open valve position). Versions with a regulating or non-rotating stem are also available. All valves are pressure tested before shipment.

code	connection size	flow diameter [mm]	throttle seal	length [mm]
NPT female thread				
HM-H99-SS-FNV-02	1/8"	5	PTFE	58
HM-H99-SS-FNV-04	1/4"	5		58
HM-H99-SS-FNV-06	3/8"	5		58
HM-H99-SS-FNV-08	1/2"	5		65
HM-H99-SS-FNV-12	3/4"	6		70
HM-H99-SS-FNV-16	1"	8		80

code	connection size	flow diameter [mm]	throttle seal	length [mm]
LET-LOK® metric connections				
HM-H99HP-SS-LMV-06	6 mm	5	PTFE	72.8
HM-H99HP-SS-LMV-08	8 mm	5		73
HM-H99HP-SS-LMV-10	10 mm	5		73.2
HM-H99HP-SS-LMV-12	12 mm	5		78.2
LET-LOK® imperial connections				
HM-H99HP-SS-LCV-04	1/4"	5	PTFE	72.7
HM-H99HP-SS-LCV-06	3/8"	5		72.7
HM-H99HP-SS-LCV-08	1/2"	5		78.3
HM-H99HP-SS-LCV-12	3/4"	6		85.3

Relation between valve working pressure and connection:

connection	pressure [bar]
threaded	690
LET-LOK® 6 mm and 1/4"	690
LET-LOK® 8 mm and 10 mm	517
LET-LOK® 12 mm, 3/8" and 1/2"	448
LET-LOK® 3/4"	390
LET-LOK® 25 mm	324
LET-LOK® 1"	276

The lower pressure rate of the valves with LET-LOK® connection is related to the maximum permissible working pressure of the particular connection size.

## INSTRUMENTATION - valves



### Needle valve H-300 type

**Body material:** AISI 316  
**Stem material:** AISI 316  
**Valve seal:** Metal / metal (AISI 316)  
**Throttle seal:** PTFE  
**Working temp.:** Up to +230°C  
**Working press.:** Up to 345 bar  
**Connection:** LET-LOK® connectors, NPT, BSPT, BSP threads

High pressure needle valve designed to be assembled in an installation or for panel mounting. Features compact construction and relatively high flow rate. Two versions: straight and 90 elbow. As a standard equipped with V-type stem (close-open valve position). Versions with a regulating stem or non-rotating stem with soft, non-rotating seal are available on request. All valves are pressure tested before shipment.

code	connection size	flow diameter [mm]	stem	length [mm]
LET-LOK® metric connections				
HM-H300-SS-LM-03-VRS	3 mm	2	V-stem	50.8
HM-H300-SS-LM-06-VRS	6 mm	4.4		58.8
HM-H300-SS-LM-08-VRS	8 mm	4.4		58.8
HM-H300-SS-LM-10-VRS	10 mm	6.4		66.4
HM-H300-SS-LM-12-VRS	12 mm	6.4		76.2
LET-LOK® imperial connections				
HM-H300-SS-LC-02-VRS	1/8"	2	V-stem	50.8
HM-H300-SS-LC-04-VRS	1/4"	4.4		58.8
HM-H300-SS-LC-06-VRS	3/8"	6.4		66
HM-H300-SS-LC-08-VRS	1/2"	6.4		71.6
HM-H300-SS-LC-12-VRS	3/4"	9.5		97
NPT female thread				
HM-H310-SS-N-02-VRS	1/8"	4.4	V-stem	41.2
HM-H310-SS-N-04-VRS	1/4"	6.4		54.0
HM-H310-SS-N-06-VRS	3/8"	9.5		76.2
HM-H310-SS-N-08-VRS	1/2"	9.5		76.2
NPT male thread				
HM-H380-SS-N-02-VRS	1/8"	4.4	V-stem	50.8
HM-H380-SS-N-04-VRS	1/4"	4.4		50.8
HM-H380-SS-N-06-VRS	3/8"	6.4		57
HM-H380-SS-N-08-VRS	1/2"	9.5		76.2

#### Other needle valves

##### H-1200



Low pressure toggle valve made of AISI 316 steel or brass. Full flow opens with 90° lift of the lever. When the lever is pushed down, the valve is closed by the spring. 1/8" and 1/4" sizes with LET-LOK® connectors and threaded connections. Working pressure 21 bar. Working temperature up to +93°C.

## INSTRUMENTATION - valves



### Metering valve H-1300, HF-1300, HXF-1300 type

**Body material:** AISI 316 (brass - option)  
**Seal:** Metal / metal AISI 316 (brass - option)  
**Working temp.:** Up to +204°  
**Working press.:** Up to 68,9 bar (H i HF)  
                           Up to 138 bar (HXF)  
**Connection:** LET-LOK® connectors,  
                           NPT, BSPT, BSP threads

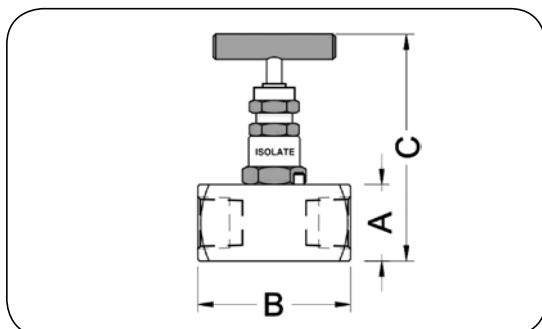
Highest quality, middle pressure metering valve for general purpose application, also for panel mounting. Three valve versions are available depending on required working pressure, flow rate and accuracy. The valve is supplied as straight or angle. Lever made of aluminium is black as standard, whereas blue, red, green and yellow, metal lever or a level with a vernier handle, which facilitates valve opening control are available on request.

code	connection size	flow diameter [mm]	stem angle [°]	length [mm]
LET-LOK® metric connections				
HM-HF1300-SS-LM-03	3 mm	1.4	3	51.3
HM-HXF1300-SS-LM-03	3 mm	0.8	1	48
HM-H1300-SS-LM-06	6 mm	3.3	5	59.5
HM-HF1300-SS-LM-06	6 mm	1.4	3	55.9
HM-HXF1300-SS-LM-06	6 mm	0.8	1	51.9
LET-LOK® imperial connections				
HM-HF1300-SS-LC-02	1/8"	1.4	3	51.3
HM-HXF1300-SS-LC-02	1/8"	0.8	1	48
HM-H1300-SS-LC-04	1/4"	3.3	5	59.5
HM-HF1300-SS-LC-04	1/4"	1.4	3	55.9
HM-HXF1300-SS-LC-04	1/4"	0.8	1	51.9
HM-H1300-SS-LC-06	3/8"	3.3	5	62.4
NPT male thread				
HM-HF1310-SS-N-02	1/8"	1.4	3	38.1
HM-H1310-SS-N-04	1/4"	3.3	5	50.8
HM-HF1310-SS-N-04	1/4"	1.4	3	49.8
HM-HXF1310-SS-N-04	1/4"	0.8	1	48

#### NOTE!!!

A unique, patent version of a metering valve can be also supplied. It is additionally equipped with a ball to allow complete flow shut-off. Contact Sales Department of TUBES INTERNATIONAL®.

## INSTRUMENTATION - valves



### Needle valve SM-1000 type

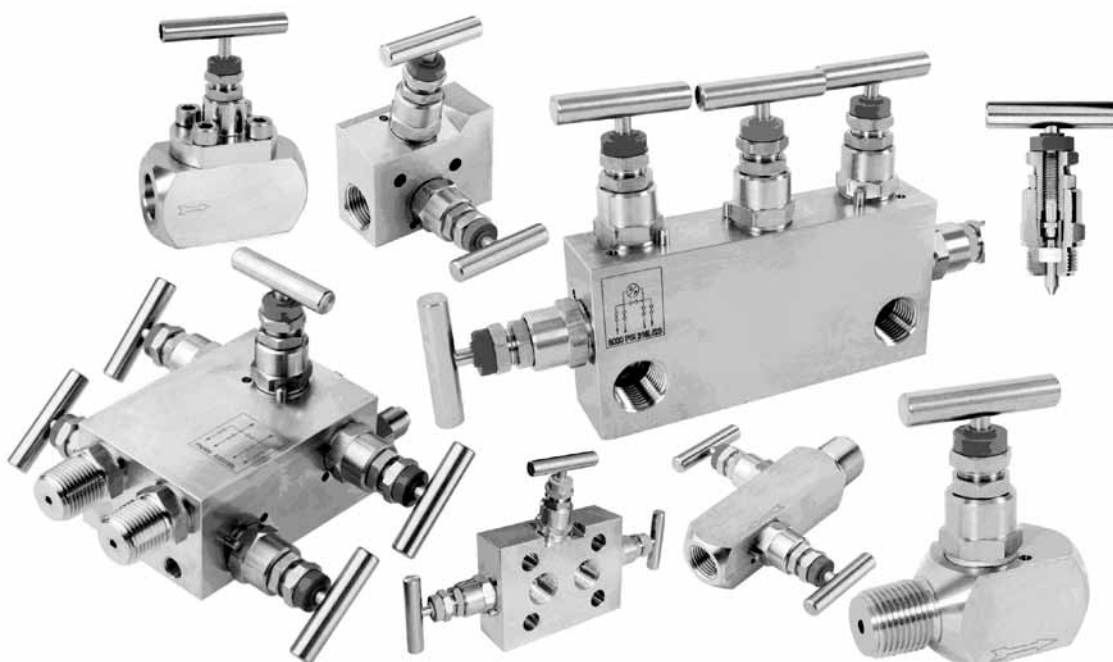
**Body material:** AISI 316L  
**Stem material:** AISI 316L  
**Valve seal:** Metal / metal (AISI 316L)  
**Throttle seal:** PTFE (Graphoil - option)  
**Working temp.:** PTFE - from -73°C up to +230°C  
                           Graphoil - from -54°C up to +510°C  
**Working press.:** Up to 690 bar  
**Connection:** NPT or BSP thread

High pressure needle valve. As a standard equipped with self-centring, non-rotating stem (needle) extending service life of metal sealing surface and ensuring leak tightness at large number of cycles. In working temperature above +150°C (above +100°C for Graphoil graphite sealing) the maximum working pressure of 690 bar must be reduced in consultation with TUBES INTERNATIONAL® Sales or Technical Department. All valves are pressure tested and marked before shipment.

code	thread size [inch]	DN [mm]	dimensions [mm]			weight [kg]
			A	B	C	
SM-1000A11AA	1/4	4	30	60	89	0.48
SM-1000B11AA	3/8	4	30	60	89	0.48
SM-1000C11AA	1/2	4	30	60	89	0.48
SM-1000D11AA	3/4	4	40	65	99	0.70
SM-1000E11AA	1	6.5	50	75	109	1.10

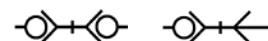
Also available:

- other types of needle valves of SM-1000 series (valves with drainage, with male thread at the inlet, with three outlets and 90° valves).
- valve blocks (2, 3, 4 and 5 valves), based on the SM-1000 valve series, with female thread, male thread and flanged,
- SM-1000 needle valves and valve blocks made of other materials (Monel, Hastelloy, Inconel, titanium, Duplex steel and many other).



# INSTRUMENTATION - quick release couplings

## QC-LOK couplings



### QC4, QC6, QC8 (1/8" ÷ 1/2")

**Standard:** Standard Instrumentation  
**Application:** Precise industrial installations  
**Working press.:** 206 bar (QC4), 103 bar (QC6), 51.7 bar (QC8)  
**Material:** AISI 316 steel  
**Seal:** Viton (from -26°C up to +204°C) - standard  
 NBR (from -37°C up to +121°C) - option  
 EPDM (from -57°C up to +121°C) - option  
 CR (from -37°C up to +107°C) - option  
 Kalrez (from -26°C up to +260°C) - option  
**Advantages:** Accurate construction, easy connection, reliability

Top quality quick release couplings, single or double shut-off. Used in aviation, gas, medical and pharmaceutical industry, laboratories. Three sizes available: QC4, QC6 and QC8. Connection: male thread, NPT (BSPT, BSP) female thread, LET-LOK® pipe connectors.

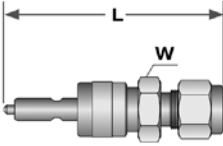
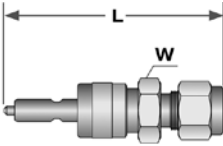
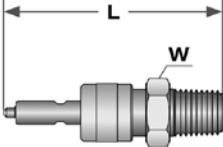
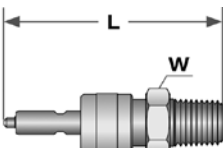
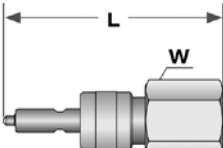
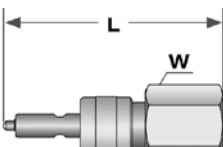
All couplings are quality-tested for their tightness before shipment. Interchangeable with quick release couplings compliant with Instrumentation standard of other producers.

picture	code	connection size	series	L [mm]	W
Socket with LET-LOK® connection 	HM-QC4-B-LC-02-SS	1/8"	QC4	57.4	5/8"
	HM-QC4-B-LC-04-SS	1/4"	QC4	58.4	5/8"
	HM-QC6-B-LC-06-SS	3/8"	QC6	65.5	3/4"
	HM-QC8-B-LC-08-SS	1/2"	QC8	78.5	15/16"
	HM-QC4-B-LM-06-SS	6 mm	QC4	58.4	16 mm
	HM-QC6-B-LM-10-SS	10 mm	QC6	68.1	22 mm
	HM-QC8-B-LM-12-SS	12 mm	QC8	78.5	24 mm
Socket with male thread 	HM-QC4-B-MN-02-SS*	1/8" NPT	QC4	51.1	5/8"
	HM-QC4-B-MN-04-SS*	1/4" NPT	QC4	54.9	5/8"
	HM-QC6-B-MN-06-SS*	3/8" NPT	QC6	60.5	3/4"
	HM-QC8-B-MN-08-SS*	1/2" NPT	QC8	75.4	15/16"
Socket with female thread 	HM-QC4-B-FN-02-SS*	1/8" NPT	QC4	54.9	5/8"
	HM-QC4-B-FN-04-SS*	1/4" NPT	QC4	61.5	5/8"
	HM-QC6-B-FN-06-SS*	3/8" NPT	QC6	65.3	3/4"
	HM-QC8-B-FN-08-SS*	1/2" NPT	QC8	81.8	15/16"
Socket for panel mounting with LET-LOK® connection 	HM-QC4-B-LBC-04-SS	1/4"	QC4	67.8	5/8"
	HM-QC6-B-LBC-06-SS	3/8"	QC6	83.2	3/4"
	HM-QC8-B-LBC-08-SS	1/2"	QC8	98.2	15/16"
	HM-QC4-B-LBM-06-SS	6 mm	QC4	67.8	16 mm
	HM-QC6-B-LBM-10-SS	10 mm	QC6	83.4	22 mm
	HM-QC8-B-LBM-12-SS	12 mm	QC8	98.1	24 mm

\* - for BSPT thread exchange the letter N for R, for BSP threads for G though.

# INSTRUMENTATION - quick release couplings

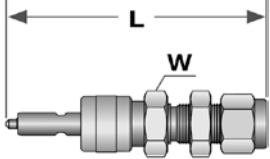
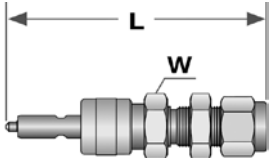
## QC-LOK couplings

picture	code	connection size	series	L [mm]	W
Plug with LET-LOK® connection and valve 	HM-QC4-D-LC-04-SS	1/4"	QC4	61.5	5/8"
	HM-QC6-D-LC-06-SS	3/8"	QC6	67.1	3/4"
	HM-QC8-D-LC-08-SS	1/2"	QC8	80.3	15/16"
	HM-QC4-D-LM-06-SS	6 mm	QC4	61.5	16 mm
	HM-QC6-D-LM-10-SS	10 mm	QC6	70.4	22 mm
	HM-QC8-D-LM-12-SS	12 mm	QC8	80.3	24 mm
Plug with LET-LOK® connection without valve 	HM-QC4-S-LC-02-SS	1/8"	QC4	57.8	5/8"
	HM-QC4-S-LC-04-SS	1/4"	QC4	59.9	5/8"
	HM-QC6-S-LC-06-SS	3/8"	QC6	64.0	3/4"
	HM-QC8-S-LC-08-SS	1/2"	QC8	75.2	15/16"
	HM-QC4-S-LM-06-SS	6 mm	QC4	59.9	16 mm
	HM-QC6-S-LM-10-SS	10 mm	QC6	67.3	22 mm
	HM-QC8-S-LM-12-SS	12 mm	QC8	75.2	24 mm
Plug with male thread and valve 	HM-QC4-D-MN-02-SS*	1/8" NPT	QC4	54.1	5/8"
	HM-QC4-D-MN-04-SS*	1/4" NPT	QC4	57.9	5/8"
	HM-QC6-D-MN-06-SS*	3/8" NPT	QC6	62.7	3/4"
	HM-QC8-D-MN-08-SS*	1/2" NPT	QC8	77.2	15/16"
Plug with male thread without valve 	HM-QC4-S-MN-02-SS*	1/8" NPT	QC4	52.6	5/8"
	HM-QC4-S-MN-04-SS*	1/4" NPT	QC4	56.4	5/8"
	HM-QC6-S-MN-06-SS*	3/8" NPT	QC6	59.7	3/4"
	HM-QC8-S-MN-08-SS*	1/2" NPT	QC8	72.1	15/16"
Plug with female thread and valve 	HM-QC4-D-FN-02-SS*	1/8" NPT	QC4	52.6	5/8"
	HM-QC4-D-FN-04-SS*	1/4" NPT	QC4	58.9	5/8"
	HM-QC6-D-FN-06-SS*	3/8" NPT	QC6	62.7	3/4"
	HM-QC8-D-FN-08-SS*	1/2" NPT	QC8	76.7	15/16"
Plug with female thread without valve 	HM-QC4-S-FN-02-SS*	1/8" NPT	QC4	51.1	5/8"
	HM-QC4-S-FN-04-SS*	1/4" NPT	QC4	57.4	5/8"
	HM-QC6-S-FN-06-SS*	3/8" NPT	QC6	59.7	3/4"
	HM-QC8-S-FN-08-SS*	1/2" NPT	QC8	71.6	15/16"

\* - for BSPT thread exchange the letter N for R, for BSP threads for G though.

# INSTRUMENTATION - quick release couplings

## QC-LOK couplings

picture	code	connection size	series	L [mm]	W
<p>Plug for panel mounting with LET-LOK® connections and valve</p> 	HM-QC4-D-LBC-04-SS	1/4"	QC4	71.1	5/8"
	HM-QC6-D-LBC-06-SS	3/8"	QC6	84.6	3/4"
	HM-QC8-D-LBC-08-SS	1/2"	QC8	100	15/16"
	HM-QC4-D-LBM-06-SS	6 mm	QC4	71.1	16 mm
	HM-QC6-D-LBM-10-SS	10 mm	QC6	84.8	22 mm
	HM-QC8-D-LBM-12-SS	12 mm	QC8	100.1	24 mm
<p>Plug for panel mounting with LET-LOK® connections without valve</p> 	HM-QC4-S-LBC-04-SS	1/4"	QC4	69.9	5/8"
	HM-QC6-S-LBC-06-SS	3/8"	QC6	81.5	3/4"
	HM-QC8-S-LBC-08-SS	1/2"	QC8	95.2	15/16"
	HM-QC4-S-LBM-06-SS	6 mm	QC4	69.6	16 mm
	HM-QC6-S-LBM-10-SS	10 mm	QC6	81.7	22 mm
	HM-QC8-S-LBM-12-SS	12 mm	QC8	95.3	24 mm

## Working parameters

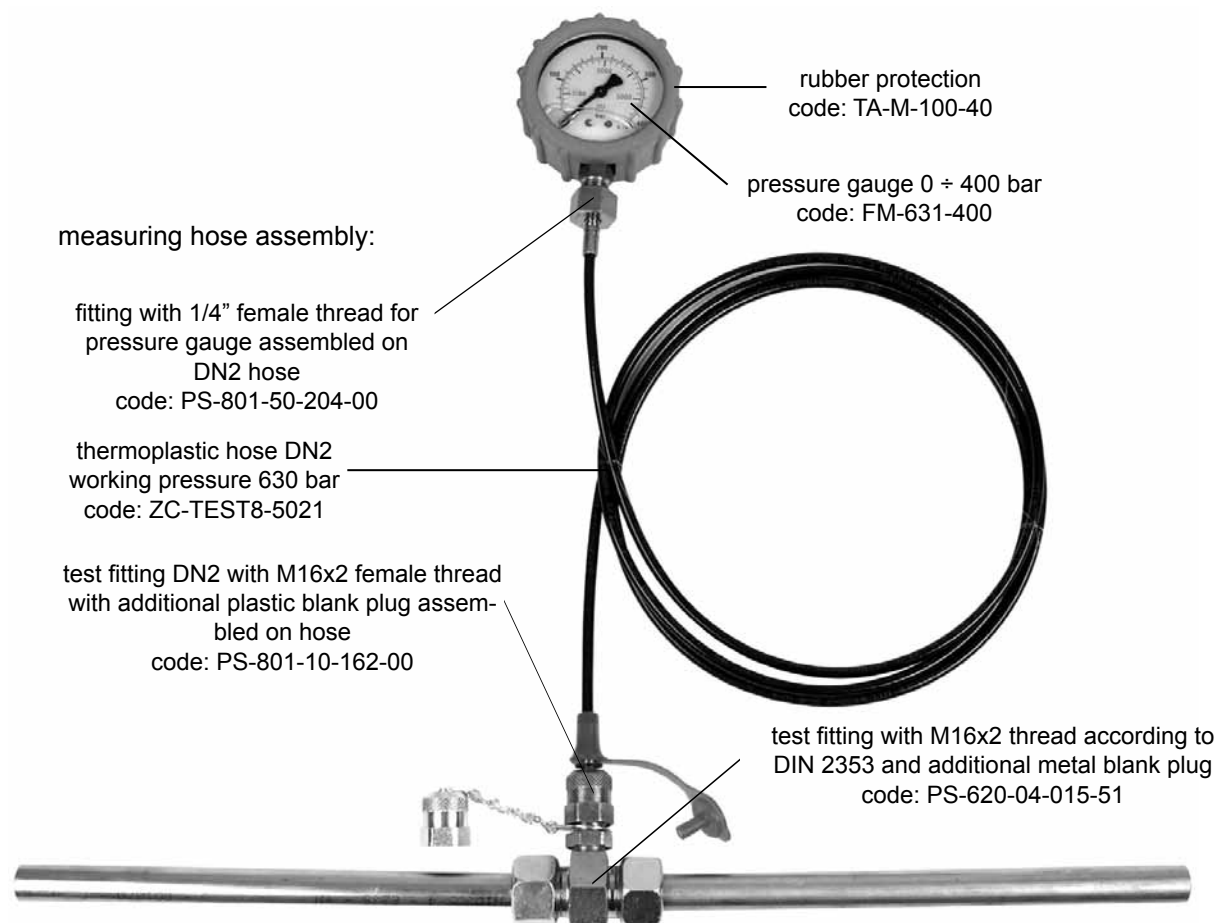
series	working pressure +20°C [bar]		max.flow rate [l/min]
	connected	during connection / disconnection	
QC4	206	17.2	15
QC6	103		22
QC8	51.7		37



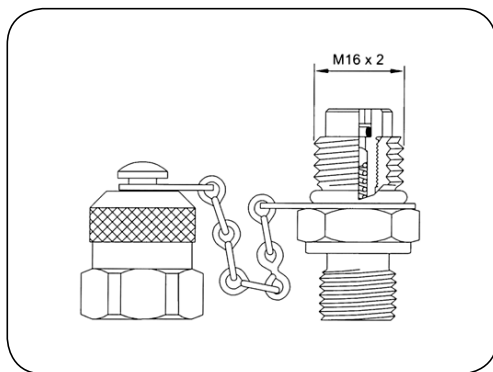
## MEASURING SYSTEMS - measuring couplings

MCS (Mini Control System) allows to build simple measuring sets to check pressure in hydraulic systems. The measurement can be performed even if the hydraulic system is working at the maximum pressure (up to 630 bar). Connecting elements are designed to allow connection without leaks and without additional tools. To be connected permanently or for the time of measurement. A wide range of measuring connectors, adapters, hoses and other accessories helps to manage any connection.

### Example of a simple measuring set connected to hydraulic installation



## MEASURING SYSTEMS - measuring couplings

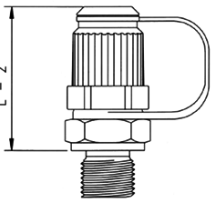
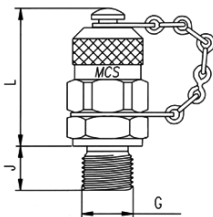


### MCS miniature couplings 620 series

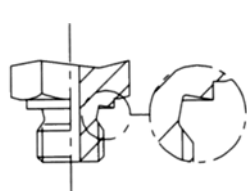
**Material:** Galvanized steel  
(AISI 316 available on request)

**Working press.:** Up to 630 bar

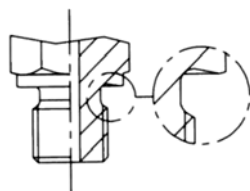
**Working temp.:** From -30°C up to +120°C (NBR seal)  
From -20°C up to +200°C (Viton seal)  
From -30°C up to +100°C (with PVC blank cap)

description	press. [bar]	code (with PVC cap)	code (with steel cap)	type of sealing	L [mm]	J [mm]	thread size G
<div>Test fitting M16x2</div> <div></div> <div></div>	400	PS-620-01-010-50	PS-620-01-010-51	A	38	8	M10x1
		PS-620-01-204-50	PS-620-01-204-51			12	1/4" BSP
		PS-620-01-012-10	PS-620-01-012-11	B		8	M12x1.5
		PS-620-01-202-10	PS-620-01-202-11			12	1/8" BSP
		PS-620-01-204-10	PS-620-01-204-11	12		1/4" BSP	
		PS-620-01-010-30	PS-620-01-010-31	C		8	M10x1
	PS-620-01-202-30	PS-620-01-202-31	36		12	1/8" BSPT	
	PS-620-01-204-30	PS-620-01-204-31			12	1/4" BSPT	
	PS-620-01-206-30	PS-620-01-206-31			3/8" BSPT		
	PS-620-01-302-30	PS-620-01-302-31			9.5	1/8"-27 NPTF	
	PS-620-01-304-30	PS-620-01-304-31			14	1/4"-18 NPTF	
	PS-620-01-306-30	PS-620-01-306-31		14.2	3/8"-18 NPTF		
	400	PS-620-01-010-20	PS-620-01-010-21	E	38	8	M10x1
	630	PS-620-01-012-20	PS-620-01-012-21			12	M12x1.5
		PS-620-01-014-20	PS-620-01-014-21				M14x1.5
		PS-620-01-016-20	PS-620-01-016-21				M16x1.5
	400	PS-620-01-202-20	PS-620-01-202-21			8	1/8" BSP
	630	PS-620-01-204-20	PS-620-01-204-21			12	1/4" BSP
		PS-620-01-206-20	PS-620-01-206-21	3/8" BSP			
	250	PS-620-01-008-00	PS-620-01-008-01	F		8.5	M8x1
	630	PS-620-01-010-00	PS-620-01-010-01			9.5	M10x1
		PS-620-01-014-00	PS-620-01-014-01			12	M14x1.5
		PS-620-01-404-00	PS-620-01-404-01			11	7/16"-20 UNF
		PS-620-01-405-00	PS-620-01-405-01				1/2"-20 UNF
		PS-620-01-406-00	PS-620-01-406-01			12	9/16"-18 UNF
		PS-620-01-408-00	PS-620-01-408-01			14	3/4"-16 UNF
		PS-620-01-204-00	PS-620-01-204-01			12	1/4" JIS
		PS-620-01-204-80	PS-620-01-204-81	60° cone			1/4" BSP

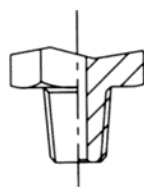
#### Types of connection seals



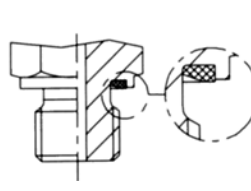
A type



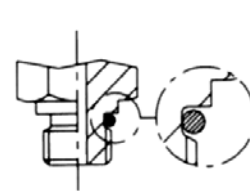
B type



C type

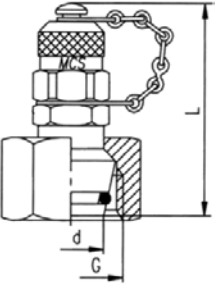


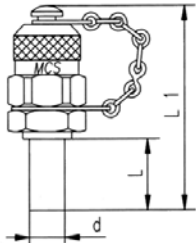
E type

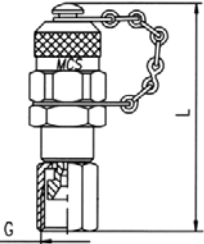


F type

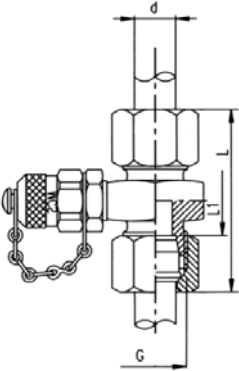
## MEASURING SYSTEMS - measuring couplings

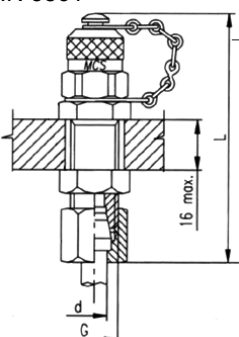
description	press. [bar]	code (with PVC cap)	code (with steel cap)	series	pipe d diameter [mm]	L [mm]	thread size G
Test fitting M16x2 according to DIN 3865. 24° cone  	315	PS-620-02-006-60	PS-620-02-006-61	L	6	65	M12x1.5
		PS-620-02-008-60	PS-620-02-008-61		8	66.5	M14x1.5
		PS-620-02-010-60	PS-620-02-010-61		10	67	M16x1.5
		PS-620-02-012-60	PS-620-02-012-61		12	58	M18x1.5
		PS-620-02-015-60	PS-620-02-015-61		15	60	M22x1.5
		PS-620-02-018-60	PS-620-02-018-61		18	61	M26x1.5
	160	PS-620-02-022-60	PS-620-02-022-61	S	22	59.5	M30x2
		PS-620-02-028-60	PS-620-02-028-61		28	66	M36x2
		PS-620-02-035-60	PS-620-02-035-61		35	71.5	M45x2
		PS-620-02-042-60	PS-620-02-042-61		42	74.5	M52x2
	630	PS-620-02-106-60	PS-620-02-106-61		6	65	M14x1.5
		PS-620-02-108-60	PS-620-02-108-61		8	66.5	M16x1.5
		PS-620-02-110-60	PS-620-02-110-61		10	67	M18x1.5
		PS-620-02-112-60	PS-620-02-112-61		12	58	M20x1.5
		PS-620-02-114-60	PS-620-02-114-61		14	58.5	M22x1.5
	400	PS-620-02-116-60	PS-620-02-116-61		16	61.5	M24x1.5
		PS-620-02-120-60	PS-620-02-120-61		20	60.5	M30x2
		PS-620-02-125-60	PS-620-02-125-61		25	65.5	M36x2
		PS-620-02-130-60	PS-620-02-130-61		30	67.5	M42x2
	315	PS-620-02-138-60	PS-620-02-138-61		38	69.5	M52x2

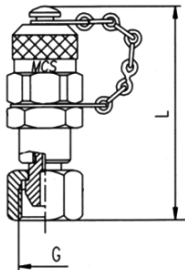
description	press. [bar]	code (with PVC cap)	code (with steel cap)	pipe d diameter [mm]	L [mm]	L1 [mm]
Test fitting M16x2 and pipe connection  	630	PS-620-03-006-50	PS-620-03-006-51	6	20	57
		PS-620-03-008-50	PS-620-03-008-51	8		
		PS-620-03-010-50	PS-620-03-010-51	10		
		PS-620-03-012-50	PS-620-03-012-51	12	26	60

description	press. [bar]	code (with PVC cap)	code (with steel cap)	L [mm]	thread size G
Test fitting M16x2  	450	PS-620-05-404-00	PS-620-05-404-01	64	7/16"-20 UNF
	420	PS-620-05-405-00	PS-620-05-405-01	67	1/2"-20 UNF
	350	PS-620-05-406-00	PS-620-05-406-01	69	9/16"-18 UNF
		PS-620-05-408-00	PS-620-05-408-01	71	3/4"-16 UNF

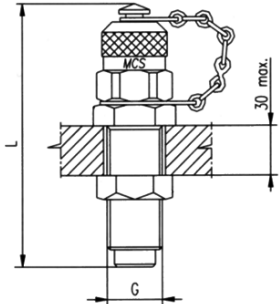
# MEASURING SYSTEMS - measuring couplings

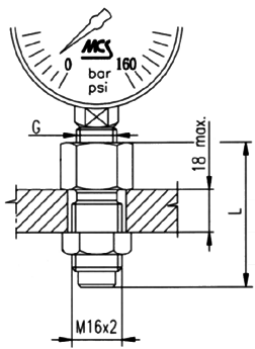
description	press. [bar]	code (with PVC cap)	code (with steel cap)	series	pipe d diameter [mm]	L [mm]	L1 [mm]	thread size G
<div>Test fitting M16x2 and pipe connection according to DIN 2353</div> 	315	PS-620-04-006-50	PS-620-04-006-51	L	6	54	20	M12x1.5
		PS-620-04-008-50	PS-620-04-008-51		8			M14x1.5
		PS-620-04-010-50	PS-620-04-010-51		10	59	22	M16x1.5
		PS-620-04-012-50	PS-620-04-012-51		12			M18x1.5
		PS-620-04-015-50	PS-620-04-015-51		15	64	25	M22x1.5
		PS-620-04-018-50	PS-620-04-018-51		18			M26x1.5
	160	PS-620-04-022-50	PS-620-04-022-51	L	22	71	26	M30x2
		PS-620-04-028-50	PS-620-04-028-51		28	69		M36x2
		PS-620-04-035-50	PS-620-04-035-51		35	80	25	M45x2
		PS-620-04-042-50	PS-620-04-042-51		42		27	M52x2
	630	PS-620-04-106-50	PS-620-04-106-51	S	6	58	24	M14x1.5
		PS-620-04-108-50	PS-620-04-108-51		8	59		M16x1.5
		PS-620-04-110-50	PS-620-04-110-51		10	63		M18x1.5
		PS-620-04-112-50	PS-620-04-112-51		12			M20x1.5
		PS-620-04-114-50	PS-620-04-114-51		14	71		M22x1.5
	400	PS-620-04-116-50	PS-620-04-116-51		16		25.5	M24x1.5
		PS-620-04-120-50	PS-620-04-120-51		20	78		M30x2
		PS-620-04-125-50	PS-620-04-125-51		25	82	27	M36x2
		PS-620-04-130-50	PS-620-04-130-51		30	91		M42x2
	315	PS-620-04-138-50	PS-620-04-138-51		38	100	29	M52x2

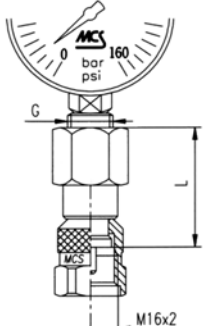
description	press. [bar]	code (with PVC cap)	code (with steel cap)	pipe d diameter [mm]	L [mm]	thread size G
Test fitting M16x2 for bulk-head connector according to DIN 3861 	630	PS-620-06-108-50	PS-620-06-108-51	8	82	M16x1.5
		PS-620-06-110-50	PS-620-06-110-51	10	84	M18x1.5

description	press. [bar]	code (with PVC cap)	code (with steel cap)	L [mm]	thread size G
Test fitting with M16x2 and female thread according to BS 5200 	630	PS-620-07-204-80	PS-620-07-204-81	62	1/4" BSP

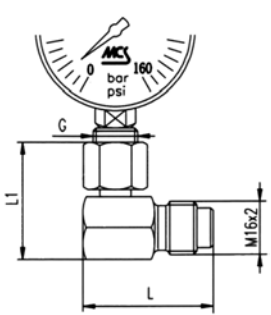
## MEASURING SYSTEMS - measuring couplings

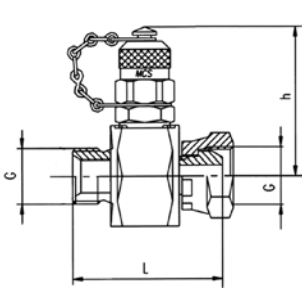
description	press. [bar]	code (with PVC cap)	code (with steel cap)	L [mm]	thread size G
<b>Bulkhead test fitting M16x2</b>  	630	PS-620-11-000-70	PS-620-11-000-71	81	M16x2


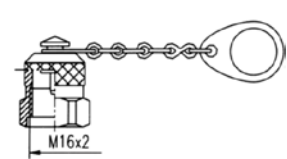
description	press. [bar]	code (free flow)	code (with pressure damper)	L [mm]	thread size G
<b>Pressure gauge M16x2 (bulkhead)</b>  	630	PS-620-08-204-00	PS-620-08-204-00-1	50	1/4" BSP
		PS-620-08-208-00	PS-620-08-208-00-1	58	1/2" BSP
		PS-620-08-304-00	PS-620-08-304-00-1	50	1/4" NPTF
		PS-620-08-308-00	PS-620-08-308-00-1	58	1/2" NPTF

description	press. [bar]	code (free flow)	code (with pressure damper)	L [mm]	thread size G
<b>Pressure gauge M16x2</b>  	630	PS-620-09-204-00	PS-620-09-204-00-1	34	1/4" BSP
		PS-620-09-208-00	PS-620-09-208-00-1	39	1/2" BSP
		PS-620-09-304-00	PS-620-09-304-00-1	34	1/4" NPTF

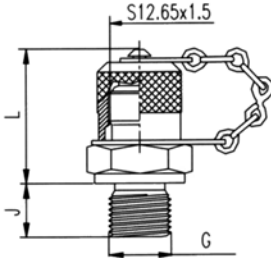
## MEASURING SYSTEMS - measuring couplings

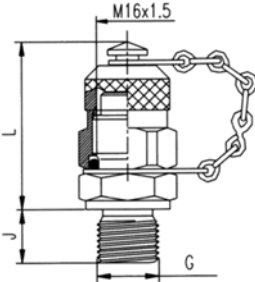
description	press. [bar]	code (free flow)	code (with pressure damper)	L [mm]	L1 [mm]	thread size G
90° pressure gauge M16x2 swivel connection  	630	PS-620-10-204-00	PS-620-10-204-00-1	40	40	1/4" BSP
		PS-620-10-208-00	PS-620-10-208-00-1	40	42.7	1/2" BSP

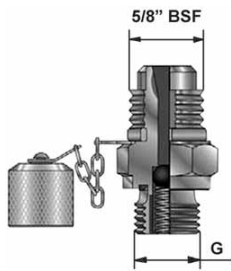
description	press. [bar]	code (with PVC cap)	code (with steel cap)	L [mm]	h [mm]		thread size G
					PVC	met.	
<div>Test fitting M16x2</div> 	400	PS-620-16-204-80	PS-620-16-204-81	53	55	51.5	1/4" BSP
		PS-620-16-206-80	PS-620-16-206-81	60			3/8" BSP
		PS-620-16-208-80	PS-620-16-208-81				1/2" BSP
		PS-620-16-212-80	PS-620-16-212-81	68	54	3/4" BSP	
	345	PS-620-16-216-80	PS-620-16-216-81	74	59.5	59.5	1" BSP

description	code	description	code
PVC blank cap  	PS-630-03-620-00	Steel blank cap  	PS-630.03.162.03

## MEASURING SYSTEMS - measuring couplings

description	press. [bar]	code (with PVC cap)	code (with steel cap)	type of sealing	L [mm]	J [mm]	thread size G
<b>Test fitting S12.65x1.5</b> 	630	PS-612-01-204-20	-	E	32	10	1/4" BSP
		-	PS-612-01-204-21		29		1/4" BSP

description	press. [bar]	code (with PVC cap)	code (with steel cap)	type of sealing	L [mm]	J [mm]	thread size G
<b>Test fitting M16x1.5</b> 	630	-	PS-615-01-204-21	E	38	10	1/4" BSP

description	press. [bar]	code (with PVC cap)	code (with steel cap)	type of sealing	L [mm]	J [mm]	thread size G
<b>Test fitting 5/8" BSF (JCB)</b> 	420	-	PS-616-01-202-21	E	-	-	1/8" BSP
		-	PS-616-01-204-21		-		1/4" BSP

## MEASURING SYSTEMS - hoses



### 089

**Internal layer:** Polyester  
**Reinforcement:** Aramid braid  
**External layer:** Polyurethane, resistant to abrasion  
**Working temp.:** From -40°C up to +100°C  
 (for water and air up to +70°C)

Lightweight, flexible hose designed for water-based liquids, hydraulic oil systems. Used in control and measuring systems. Pinpricked as a standard.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
TO-089A-02	2	5	630	1900	20	2.00
TO-089C-04	4	8	630	1900	40	4.50



### TEST 7

**Internal layer:** Polyester  
**Reinforcement:** Polyester braid  
**External layer:** Polyurethane, resistant to abrasion  
**Working temp.:** From -40°C up to +100°C  
 (for water and air up to +70°C)

Lightweight, flexible hose designed for water-based liquids, hydraulic oil. Used in hydraulic control and measuring systems. Pinpricked version available on request (for gases and air).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-TEST7-5021	2.1	5	265	800	20	2.10
ZC-TEST7-5521	2.1	5.5	265	800	20	2.20
ZC-TEST7-5526	2.6	5.5	265	800	20	2.20



### TEST 8

**Internal layer:** Polyester  
**Reinforcement:** Aramid braid  
**External layer:** Polyurethane, resistant to abrasion  
**Working temp.:** From -40°C up to +100°C  
 (for water and air up to +70°C)

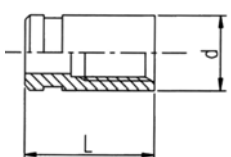
Lightweight, flexible hose designed for water based liquids, hydraulic oil. Used in hydraulic control and measuring systems. Pinpricked version available on request (for gases and air).

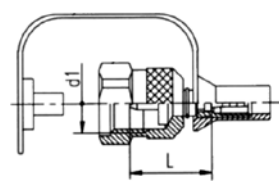
code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-TEST8-5021	2.1	5	630	1890	20	1.90
ZC-TEST8-8040	4	8	550	1650	35	4.40



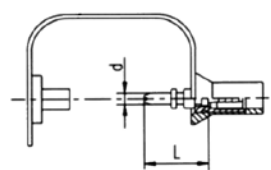
## MEASURING SYSTEMS - hose fittings

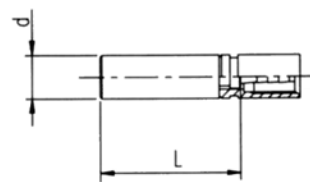
Fittings described below are designed for 2x5 mm hose (801 type) and 4x8 mm (804 type). To select proper fittings for hoses with different diameters, please contact TUBES INTERNATIONAL® Technical Department.

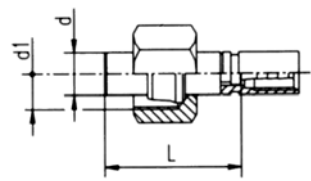
Crimping ferrule			
			
<b>800.00</b>			
press. [bar]	code	L [mm]	d [mm]
-	PS-800-00-002-00	14	8
-	PS-800-00-004-00	17	11.5

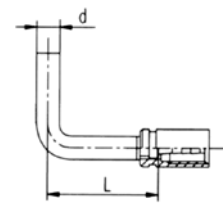
Test fitting. female thread			
			
<b>801.10</b> <b>804.10</b>			
press. [bar]	code	L [mm]	thread size d1
630	PS-801-10-161-00	22	M16x1.5
	PS-801-10-162-00	22	M16x2
	PS-810-10-162-00*	22	M16x2
500	PS-804-10-162-00	22	M16x2

\* - AISI 316 steel

Test fitting. push-in connection			
			
<b>801.20</b>			
press. [bar]	code	L [mm]	d [mm]
400	PS-801-20-000-00	19	3.3

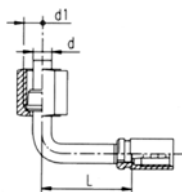
Pipe fitting			
			
<b>801.30</b> <b>804.30</b>			
press. [bar]	code	L [mm]	d [mm]
-	PS-801-30-004-00	26	4
	PS-801-30-006-00	25	6
	PS-801-30-008-00	25	8
	PS-804-30-004-00	29	4
	PS-804-30-006-00	29	6
	PS-804-30-008-00	29	8

Pipe fitting, female thread (with cutting ring), 24° cone				
				
<b>801.31</b> <b>801.32</b>				
press. [bar]	code	L [mm]	d [mm]	thread size d1
315	PS-801-31-006-00	26	6	M12x1.5
630	PS-801-32-006-00	26	6	M14x1.5
315	PS-801-31-008-00	26	8	M14x1.5
630	PS-801-32-008-00	26	8	M16x1.5

90° elbow pipe fitting			
			
<b>801.35</b>			
press. [bar]	code	L [mm]	d [mm]
-	PS-801-35-004-00	23	4
	PS-801-35-006-00	22	6
	PS-801-35-008-00	31	8

# MEASURING SYSTEMS - hose fittings

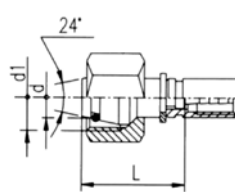
90° elbow. female thread (with cutting ring). 24° cone



**801.36**  
**801.37**

press. [bar]	code	L [mm]	d [mm]	thread size d1
315	PS-801-36-006-00	28	6	M12x1.5
630	PS-801-37-006-00	28	6	M14x1.5
315	PS-801-36-008-00	30	8	M14x1.5
630	PS-801-37-008-00	30	8	M16x1.5

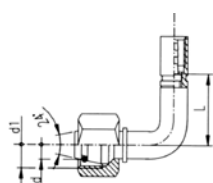
Female thread. 24° cone. O-ring. DKOL / DKOS



**801.40**  
**801.41**  
**804.40**  
**804.41**

press. [bar]	code	L [mm]	d [mm]	thread size d1
315	PS-801-40-006-00	21	6	M12x1.5
630	PS-801-41-006-00	21	6	M14x1.5
315	PS-801-40-008-00	21	8	M14x1.5
630	PS-801-41-008-00	21	8	M16x1.5
315	PS-801-40-010-00	21	10	M16x1.5
630	PS-801-41-010-00	21	10	M18x1.5
315	PS-804-40-006-00	21	6	M12x1.5
500	PS-804-41-006-00	21	6	M14x1.5
315	PS-804-40-008-00	21	8	M14x1.5
500	PS-804-41-008-00	21	8	M16x1.5
315	PS-804-40-010-00	21	10	M16x1.5
500	PS-804-41-010-00	21	10	M18x1.5

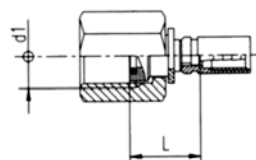
90° elbow. female thread. 24° cone. O-ring. DKOL / DKOS



**801.42**  
**801.43**

press. [bar]	code	L [mm]	d [mm]	thread size d1
315	PS-801-42-006-00	32	6	M12x1.5
630	PS-801-43-006-00	32	6	M14x1.5
315	PS-801-42-008-00	30	8	M14x1.5
630	PS-801-43-008-00	30	8	M16x1.5
315	PS-801-42-010-00	30	10	M16x1.5
630	PS-801-43-010-00	30	10	M18x1.5

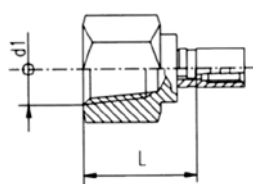
Pressure gauge fitting



**801.50**  
**804.50**

press. [bar]	code	L [mm]	thread size d1
630	PS-801-50-204-00	15	1/4" BSP
	PS-801-50-208-00	17	1/2" BSP
	PS-801-50-112-00	17	M20x1.5
500	PS-804-50-204-00	15	1/4" BSP

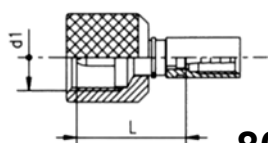
Pressure gauge fitting



**801.50**

press. [bar]	code	L [mm]	thread size d1
630	PS-801-50-304-00	23	1/4"-18 NPTF

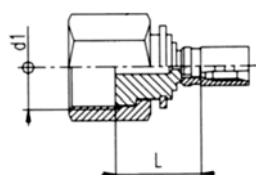
Test fitting with female thread



**801.10.125**

press. [bar]	code	L [mm]	thread size d1
630	PS-801-10-125-00	22	S12.65x1.5

ORFS female thread

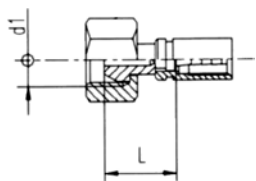


**801.53**

press. [bar]	code	L [mm]	thread size d1
400	PS-801-53-506-00	18	11/16"-16 UN

## MEASURING SYSTEMS - hose fittings

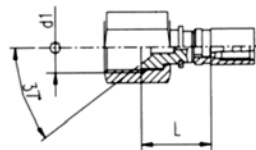
DKL female thread



**801.60**  
**804.60**

press. [bar]	code	L [mm]	thread size d1
400	PS-801-60-202-00	14	1/8" BSP
630	PS-801-60-204-00	18	1/4" BSP
	PS-801-60-141-00	18	M14x1.5
500	PS-804-60-204-00	18	1/4" BSP

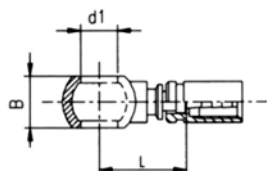
JIC female thread



**801.60**  
**804.60**

press. [bar]	code	L [mm]	thread size d1
450	PS-801-60-404-00	15	7/16"-20 UNF
420	PS-801-60-405-00	17	1/2"-20 UNF
450	PS-804-60-404-00	15	7/16"-20 UNF

BANJO straight fitting



**801-70**  
**804-70**

press- [bar]	code	L [mm]	d1	B [mm]
200	PS-801-70-008-00	19	8 mm	8
	PS-801-70-010-00	21	10 mm	10
	PS-801-70-202-00	21	1/8"	10
	PS-804-70-008-00	19	8 mm	8
	PS-804-70-010-00	21	10 mm	10
	PS-804-70-202-00	21	1/8"	10

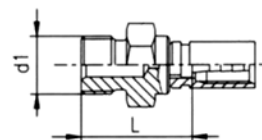
BSF female thread (JCB)



**801.10**

press. [bar]	code	L [mm]	thread size d1
420	PS-801-10-145-00	-	5/8" BSF

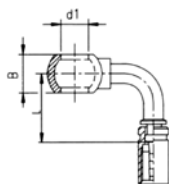
BSP male thread



**801.80**

press. [bar]	code	L [mm]	thread size d1
400	PS-801-80-202-00	19	1/8" BSP
	PS-801-80-204-00	24.5	1/4" BSP

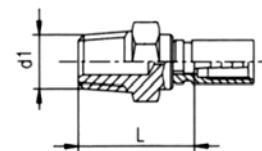
BANJO (90° elbow) fitting



**801.72**

press. [bar]	code	L [mm]	d1	B [mm]
200	PS-801-72-008-00	25	8 mm	8
	PS-801-72-010-00	22	10 mm	10
	PS-801-72-202-00	22	1/8"	10

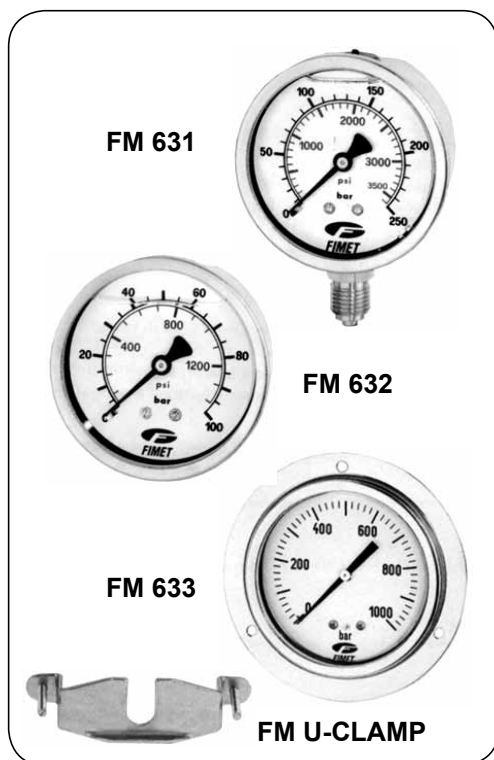
NPTF male thread



**801.80**  
**804.80**

press. [bar]	code	L [mm]	thread size d1
400	PS-801-80-302-00	21	1/8"-27 NPTF
	PS-804-80-302-00	21	1/8"-27 NPTF

## MEASURING SYSTEMS - pressure gauge



### FM 631 / 632 / 633

<b>Diameter:</b>	63 mm
<b>Case:</b>	Stainless steel
<b>Window:</b>	Polycarbonate
<b>Sensing element:</b>	Copper alloy Bourdon tube
<b>Connection:</b>	Brass
<b>Fill:</b>	Glycerol 86.5%
<b>Working temp.:</b>	From -10°C up to +60°C
<b>Internal protection:</b>	1.6
<b>Operational position:</b>	Vertical (+/-5%)
<b>Versions:</b>	FM 631 - bottom connection FM 632 - back connection FM 633 - for panel mounting

Standard pressure gauge intended for application in industry. A measuring range must be chosen according to working pressure, so that:

- constant or slowly fluctuating pressure does not exceed 75% of measuring range,
- pulsating pressure does not exceed 60% of measuring range,
- dynamic pressure impulses do not exceed the maximum measuring range,

For appropriate choice of pressure gauges for gases above 25 bar and for welding gases (oxygen, acetylene) please contact TUBES INTERNATIONAL® Sales or Technical Department. Because of the material used to make the measuring parts of pressure gauges, they must not be used for application with viscous, caustic and crystallisable fluids.

code	code	code	measuring range [bar]	male thread connection [inch]
FM-631-000	FM-632-000	FM-633-000	-1 ÷ 0	1/4
FM-631-001	FM-632-001	FM-633-001	0 ÷ 1	1/4
FM-631-002	FM-632-002	FM-633-002	0 ÷ 2.5	1/4
FM-631-004	FM-632-004	FM-633-004	0 ÷ 4	1/4
FM-631-006	FM-632-006	FM-633-006	0 ÷ 6	1/4
FM-631-010	FM-632-010	FM-633-010	0 ÷ 10	1/4
FM-631-012	FM-632-012	FM-633-012	0 ÷ 12	1/4
FM-631-016	FM-632-016	FM-633-016	0 ÷ 16	1/4
FM-631-020	FM-632-020	FM-633-020	0 ÷ 20	1/4
FM-631-025	FM-632-025	FM-633-025	0 ÷ 25	1/4
FM-631-040	FM-632-040	FM-633-040	0 ÷ 40	1/4
FM-631-060	FM-632-060	FM-633-060	0 ÷ 60	1/4
FM-631-100	FM-632-100	FM-633-100	0 ÷ 100	1/4
FM-631-160	FM-632-160	FM-633-160	0 ÷ 160	1/4
FM-631-250	FM-632-250	FM-633-250	0 ÷ 250	1/4
FM-631-315	FM-632-315	FM-633-315	0 ÷ 315	1/4
FM-631-400	FM-632-400	FM-633-400	0 ÷ 400	1/4
FM-631-600	FM-632-600	FM-633-600	0 ÷ 600	1/4
FM-U-CLAMP	clamp for panel mounting of pressure gauges FM 632 type			

## MEASURING SYSTEMS - pressure gauge

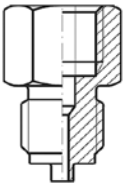


### Pressure gauge adaptor

**Material:** Brass or AISI 316Ti steel

**Seal:** Flat

Adaptors designed for the connection of pressure measuring equipment, pressure gauge valves, pressure gauge cocks and other accessories.

picture	code	thread size	
		female	male
	FM-RD-04B-02B	1/4" BSP	1/8" BSP
	FM-RD-04B-06B	1/4" BSP	3/8" BSP
	FM-RD-04B-08B	1/4" BSP	1/2" BSP
	FM-RD-04B-M10	1/4" BSP	M10x1
	FM-RD-04B-M12	1/4" BSP	M12x1.5
	FM-RD-08B-04N	1/2" BSP	1/4" NPT
	FM-RD-08B-04B	1/2" BSP	1/4" BSP
	FM-RD-08B-06B	1/2" BSP	3/8" BSP
	FM-RD-08B-M20	1/2" BSP	M20x1.5
	FM-RD-M20-08B	M20x1.5	1/2" BSP

Code example of AISI 316 Ti steel adaptor: FM-RD-04B-02B-SS.  
Working pressure depends on thread size and adaptor material.

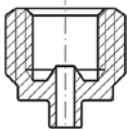


### Pressure gauge nipple adaptor

**Material:** Brass or AISI 316Ti steel

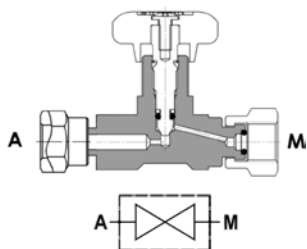
**Seal:** Flat

Adaptors designed for the connection of pressure measuring equipment, pressure gauge valves, pressure gauge cocks and other accessories.

picture	code	thread size	
		female	male
	FM-RDN-04B-06B	1/4" BSP	3/8" BSP
	FM-RDN-04B-08B	1/4" BSP	1/2" BSP
	FM-RDN-04B-06N	1/4" BSP	3/8" NPT
	FM-RDN-04B-08N	1/4" BSP	1/2" NPT
	FM-RDN-04B-M20	1/4" BSP	M20x1.5

Code example of AISI 316 Ti steel adaptor: FM-RDN-04B-06B-SS.  
Working pressure depends on thread size and adaptor material.

## MEASURING SYSTEMS - pressure gauge



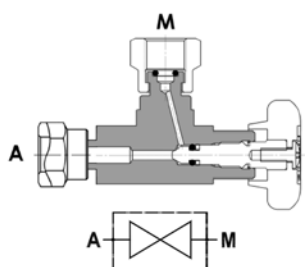
### Shut-off valve FPE

**Material:** Body - nickel-plated brass  
Wheel - plastic  
**Seal:** NBR  
**Connection:** BSP female thread  
**Working temp.:** From -20°C up to +90°C

FPE type valve with M connection for a pressure gauge, used in hydraulic systems to shut off a pressure gauge from installation.

The valve must be connected with an adapter FPE / FPEA.

code	thread size [inch]	working pressure [bar]	weight [kg]
DC-FPE-04	1/4	350	0.17



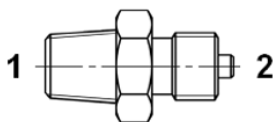
### Shut-off valve FPEA

**Material:** Body - nickel-plated brass  
Wheel - plastic  
**Seal:** NBR  
**Connection:** BSP female thread  
**Working temp.:** From -20°C up to +90°C

FPEA type valve with M connection for a pressure gauge, used in hydraulic systems to shut off a pressure gauge from installation.

The valve must be connected with an adapter FPE / FPEA.

code	thread size [inch]	working pressure [bar]	weight [kg]
DC-FPEA-04	1/4	350	0.16



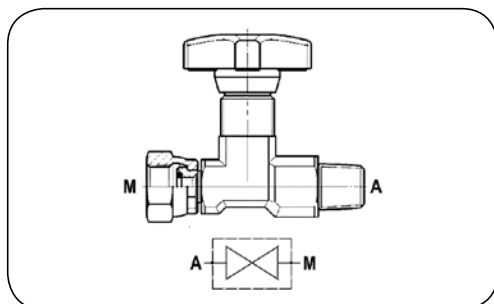
### Adapter FPE / FPEA

**Material:** Galvanized steel

Adapter for optional use with shut-off valves, both FPE and FPEA types. Allows to assemble the valve in any position.

code	thread size 1 [inch]	thread size 2 [inch]	working pressure [bar]
DC-FPE-FPEA	1/4 BSPT	1/4 BSP	350

## MEASURING SYSTEMS - pressure gauge

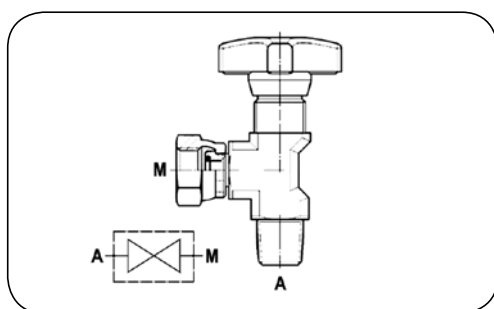


### Shut-off valve FT 290

**Material:** Body - zinc-plated steel  
Wheel - plastic  
**Seal:** NBR  
**Working temp.:** From -20°C up to +90°C

A valve with M connection for a pressure gauge. Used in hydraulic systems to shut a pressure gauge from the system.

code	thread size M [inch]	thread size A [inch]	working pressure [bar]
DC-FT290-04	1/4 BSP	1/4 BSPT	350

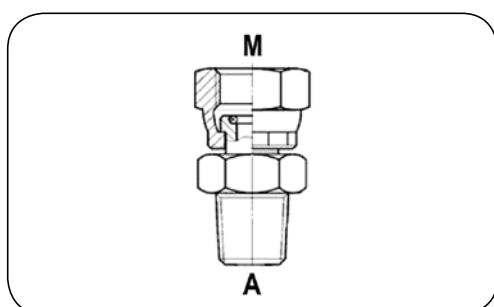


### Shut-off valve FT 291

**Material:** Body - zinc-plated steel  
Wheel - plastic  
**Seal:** NBR  
**Working temp.:** From -20°C up to +90°C

A valve with M connection for a pressure gauge. Used in hydraulic systems to shut a pressure gauge from the system.

code	thread size M [inch]	thread size A [inch]	working pressure [bar]
DC-FT291-04	1/4 BSP	1/4 BSPT	350



### Adapter FT 299

**Material:** Zinc-plated steel  
**Seal:** NBR  
**Working temp.:** From -20°C up to +90°C

An adapter with M connection for a pressure gauge. Used in hydraulic systems to connect a pressure gauge with the system.

code	thread size M [inch]	thread size A [inch]	working pressure [bar]
DC-FT299-04	1/4 BSP	1/4 BSPT	400
DC-FT299-08	1/4 BSP	1/2 BSPT	400

## MEASURING SYSTEMS - measuring sets



### TEMA 100

Measuring system designed to monitor static, dynamic pressure as well as vacuum in hydraulic and pneumatic applications. The measuring system consists of a basic set and such accessories as: additional measuring nipples, hoses and adapters that facilitate measurement in hardly accessible places. A self-venting device guarantees accurate readings. A quick release coupling designed to be connected with a measuring nipple has integrated shut-off valves that ensure spill free connection and disconnection of the measuring system.

Maximum working pressure up to 600 bar.

Standard set designed to measure pressure in hydraulic systems is supplied in a plastic case and consists of:

- measuring handle TA-M-101-2\*,
- pressure gauge of your choice\*\*,
- measuring nipple TA-M-120,
- measuring hose assembly TA-M-130 (L=2.5m),
- adapter TA-M-135 (1/4" BSP female / 1/8" BSP male thread),
- adapter TA-M-136 (1/8" BSP female / 1/4" BSP male thread),
- adapter TA-M-139 (M16x2 female thread)

There is empty space for two additional pressure gauges and TA-M-139 adapter in this plastic case.

code	type
TA-M-101	Set without pressure gauge
TA-M-105	Set with 1 press. gauge (-1 ÷ 15 bar)
TA-M-112	Set with 1 press. gauge (0 ÷ 25 bar)
TA-M-113	Set with 1 press. gauge (0 ÷ 40 bar)
TA-M-114	Set with 1 press. gauge (0 ÷ 60 bar)
TA-M-106	Set with 1 press. gauge (0 ÷ 100 bar)
TA-M-107	Set with 1 press. gauge (0 ÷ 250 bar)
TA-M-108	Set with 1 press. gauge (0 ÷ 400 bar)
TA-M-109	Set with 1 press. gauge (0 ÷ 600 bar)

\* option - measuring handle TA-M-101-21A











\*\* for a set with 2 pressure gauges, add their numbers to the code - e.g. TA-M-106-13 (a set with one pressure gauge 0÷100 bar and one pressure gauge 0÷40 bar.)

#### COMPONENTS AND ACCESSORIES OF TEMA 100 SYSTEM

picture	code	description
	TA-M-101-2	Measuring handle that can be connected under low pressure. Equipped with pressure gauge port, quick release coupling with shut-off valve and self-venting device.
	TA-M-101-21A	Measuring handle that can be connected under full working pressure. Equipped with pressure gauge port, quick release coupling with shut-off valve, self-venting device and valve.
	TA-M-101-3	Self-venting block with an alternative position of a venting screw.
	TA-M-120	Measuring nipple 1/8" BSP male thread, A type seal, galv. steel (PVC blank cap).
	TA-M-120-126	Measuring nipple 1/8" BSP male thread, A type seal, galv. steel.
	TA-M-120UNF	Measuring nipple 7/16" UNF male thread, galv. steel (PVC blank cap).
	TA-M-121-125	Measuring nipple 1/4" BSP male thread, A type seal, galv. steel (PVC blank cap).
	TA-M-121-126	Measuring nipple 1/4" BSP male thread, A type seal, galv. steel.
	TA-M-121R	Measuring nipple 1/4" BSP male thread, A type seal, AISI 316 steel (PVC blank cap).
	TA-M-121R-126R	Measuring nipple 1/4" BSP male thread, A type seal, AISI 316 steel
	TA-M-122-125	Measuring nipple 1/4" BSP male thread, B type seal, galv. (PVC blank cap).
	TA-M-122-126	Measuring nipple 1/4" BSP male thread, B type seal, galv. steel.



## MEASURING SYSTEMS - measuring sets

COMPONENT PARTS AND ACCESSORIES OF TEMA SYSTEM 100		
picture	code	description
	TA-M-123-125	Measuring nipple M12x1.5 male thread. A type seal. galv. steel (PVC blank cap).
	TA-M-123-126	Measuring nipple M12x1.5 male thread. A type seal. galv. steel.
	TA-M-124-125	Measuring nipple M14x1.5 male thread. A type seal. galv. steel (PVC blank cap).
	TA-M-124-126	Measuring nipple M14x1.5 male thread. A type seal. galv. steel.
	TA-M-124UNF	Measuring nipple 9/16" UNF male thread. galv. steel (PVC blank cap).
	TA-M-128-125	Measuring nipple M10x1 male thread. A type seal. galv. steel (PVC blank cap).
	TA-M-128-126	Measuring nipple M10x1 male thread. A type seal. galv. steel.
	TA-M-129R	Measuring nipple M10x1 male thread. B type seal. AISI 316 steel (PVC blank cap).
	TA-M-129R-126R	Measuring nipple M10x1 male thread. B type seal. AISI 316 steel
	TA-M-125	Blank cap of measuring nipple (PVC).
	TA-M-126K	Blank cap of measuring nipple (galv. steel).
	TA-M-126R	Blank cap of measuring nipple (AISI 316 steel).
	TA-M-150	Socket of quick release coupling with 1/8" BSP male thread for measuring nipple.
	TA-M-139	Changeover adapter for TEMA 100 system with M16x2 metric male thread.
	TA-M-150-137	Socket of quick release coupling with 1/4" BSP female thread for measuring nipple.
	TA-M-130	Measuring hose assembly L = 2.5 m with TA-M-120 plug and TA-M-150 socket.
	TA-M-160-1	Pipe connector for measuring nipple 6 mm x 1/8".
	TA-M-161-1	Pipe connector for measuring nipple 8 mm x 1/8".
	TA-M-162-1	Pipe connector for measuring nipple 10 mm x 1/8".
	TA-M-163-1	Pipe connector for measuring nipple 12 mm x 1/8".
	TA-M-164-1	Pipe connector for measuring nipple 14 mm x 1/8".
	TA-M-165-1	Pipe connector for measuring nipple 15 mm x 1/8".
	TA-M-135	Adapter 1/4" female thread / 1/8" male thread.
	TA-M-136	Adapter 1/8" female thread / 1/4" male thread.
	TA-M-137	Adapter 1/8" female thread / 1/4" female thread.
	TA-M-140	90° elbow adapter 1/8" female thread / 1/8" female thread.
	TA-M-100-40	Rubber protection of pressure gauge Ø 63 mm.
	TA-M-101-1	Plastic case.

## MEASURING SYSTEMS - measuring sets



**DC-BOX-01**



**DC-BOX-02**

### DC-BOX

Measuring sets designed to monitor static, dynamic pressure as well as vacuum in hydraulic and pneumatic installations. The sets consist of pressure gauges, measuring connectors and extension hose assemblies. The sets supplied in plastic cases contain one of the two assortments of equipment.

**PARTS OF DC-BOX SETS**

picture	description	DC-BOX-01	DC-BOX-02
	Pressure gauge DN63, 1/4", 0 ÷ 100 bar	-	X
	Pressure gauge DN63, 1/4", 0 ÷ 160 bar	X	-
	Pressure gauge DN63, 1/4", 0 ÷ 250 bar	-	X
	Pressure gauge DN63, 1/4", 0 ÷ 315 bar	X	-
	Pressure gauge DN63, 1/4", 0 ÷ 400 bar	-	X
	Metric M16x2 thread measuring nipple with 1/4" BSP male thread, E seal, zinc-plated steel, (PVC dust cap)	X	X
	Metric M16x2 thread measuring nipple with 3/8" BSP male thread, E seal, zinc-plated steel, (PVC dust cap)	X	X
	Metric M16x2 thread measuring nipple with 1/4" NPT male thread, zinc-plated steel, (PVC dust cap)	X	X
	Metric M16x2 thread measuring nipple with 3/8" NPT male thread, zinc-plated steel, (PVC dust cap)	-	X
	Metric M16x2 thread measuring nipple with Metric M10x1 male thread, F seal, zinc-plated steel, (PVC dust cap)	X	X
	Metric M16x2 thread measuring nipple with 7/16" UNF male thread, F seal, zinc-plated steel, (PVC dust cap)	-	X
	Metric M16x2 thread measuring nipple with 9/16" UNF male thread, F seal, zinc-plated steel, (PVC dust cap)	-	X
	Metric M16x2 thread measuring nipple with Metric M18x1.5 female thread DIN 3865, cone 24°, 12L, zinc-plated steel, (metal dust cap)	-	X
	Metric M16x2 pressure gauge fitting with 1/4" BSP female thread, zinc-plated steel	X	X
	Metric M16x2 pressure gauge fitting with 1/2" BSP female thread, zinc-plated steel	-	X
	Metal dust cap M16x2, zinc-plated steel	X	X
	90° Metric M16x2 pressure gauge fitting with 1/4" BSP female thread, zinc-plated steel	X	-
	Metric M16x2 pressure gauge for panel mounting with 1/4" BSP female thread, zinc-plated steel	-	X
	Extension hose assembly M16x2, L = 1 m	-	X
	Extension hose assembly M16x2, L = 1.5 m	X	-
	Extension hose assembly M16x2, L = 2 m	-	X

# MEASURING SYSTEMS - diagnostic quick release couplings

## Quick release couplings ISO 15171-1



### PERFECTING (1/8")

**Standard:** ISO 15171-1  
**Application:** High pressure hydraulics (hydraulic oil)  
**Working press.:** Up to 400 bar  
**Material:** Zinc-plated steel  
**Seal:** NBR (from -40°C up to +120°C)

Diagnostic quick release couplings intended to measure pressure in hydraulic systems. Disconnected plugs (as a standard permanently fixed in the hydraulic system) handle the maximum working pressure. The connection and disconnection of the quick release couplings under pressure is not allowed (permitted if the system is off and without pressure). Interchangeable with quick release couplings according to ISO 15171-1 of other producers.

#### Socket

picture	code	size [inch]	thread size [inch]	working pressure [bar]	bursting pressure [bar]	flow at $\Delta p = 3$ bar [l/min]
	PC-1PDF1	1/8	1/8 NPT female	400	1300	4.4
	PC-1PDF2		1/4 NPT female			
	PC-1PDM2		1/4 NPT male			

#### Plug

picture	code	size [inch]	thread size [inch]	working pressure [bar]	bursting pressure [bar]	flow at $\Delta p = 3$ bar [l/min]
	PC-PD1F1	1/8	1/8 NPT female	400	1300*	4.4
	PC-PD1F2		1/4 NPT female			
	PC-PD1M1		1/8 NPT male			
	PC-PD1M2		1/4 NPT male			

\* - the bursting pressure of a disconnected plug: 1600 bar

#### Dust cap

picture	code	size [inch]	material
	PC-PH1DC	1/8	NBR

## CLEANING AND WASHING - low pressure

### Low pressure hoses for cleaning and washing



#### FORTRESS 300®

**Internal layer:** Black NBR rubber compound

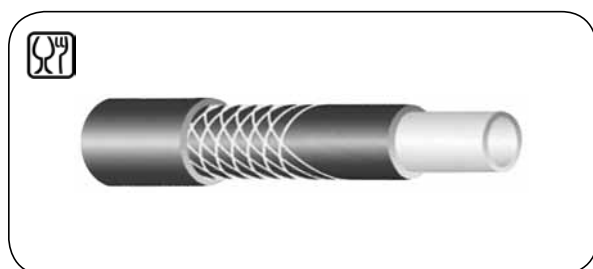
**Reinforcement:** Synthetic cord

**External layer:** Blue Carbryn® rubber protected by Microban® cover

**Working temp.:** From -30°C up to +93°C

High-quality, flexible, non-staining, kink and torsion resistant hose. Widely used for washdown applications in food processing plants, dairies, packing houses, bottling plants, breweries, canneries due to Microban® antimicrobial external protection layer that inhibits the growth of bacteria, mold, and fungi. In compliance with ISO 1307.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
GY-FORT300-13	12.9	22.8	20	80	0.43	152.5
GY-FORT300-16	15.9	27	20	80	0.54	152.5
GY-FORT300-19	19.1	30.2	20	80	0.61	152.5



#### THERMOCLEAN® AL 20

**Internal layer:** White, smooth PVC

**Reinforcement:** Synthetic cord

**External layer:** Blue, smooth PVC

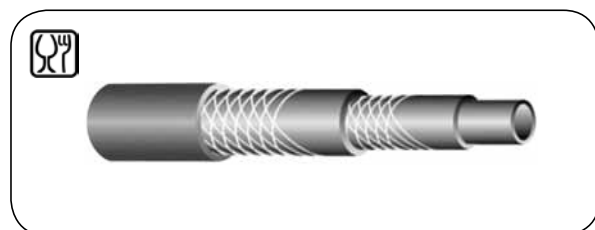
**Working temp.:** From -15°C up to +70°C

Flexible hose used for washing applications (cold and hot water) and slightly aggressive chemicals. External layer is resistant to animal and vegetable fats. Recommended for food industry. In compliance with European Directive 1935/2004 CE and 2007/19/CE (stimulant A, B and C). Fittings and ferrules should be assembled after the hose is heated for 30 seconds in hot water (+60°C). To be used with hydraulic fittings (TI-Z...) crimped with ferrules or fittings assembled on the hose with the use of safety clamps (that are to be tightened during first use in elevated temperature).

code	I.D. [mm]	O.D. [mm]	working pressure 20°C/70°C [bar]	bursting pressure 20°C/70°C [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TR-THERMOAL20-12	12	20	33/20	100/60	54	0.26	25
TR-THERMOAL20-16	16	24	33/20	100/60	72	0.32	25
TR-THERMOAL20-19	19	28	33/20	100/60	85.5	0.43	25

## CLEANING AND WASHING - low pressure

### Low pressure hoses for cleaning and washing



#### THERMOCLEAN® 40

**Internal layer:** Grey, smooth PVC  
**Reinforcement:** Double polyester cord  
**External layer:** Blue, smooth PVC  
**Working temp.:** From -10°C up to +70°C  
 (with peaks up to + 80°C)

Flexible hose used for washing applications (cold and hot water) and slightly aggressive chemicals. External layer is resistant to animal and vegetable fats. Recommended for food industry. In compliance with European Directive 1935/2004 CE and 2007/19/CE (stimulant A, B and C). To be used with crimped THERMOCLEAN fittings.

code	I.D. [mm]	O.D. [mm]	working pressure 20°C/70°C [bar]	bursting pressure 20°C/70°C [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TR-THERMO40-12	12	22	80/40	240/120	42	0.33	50



#### THERMOCLEAN 100

**Internal layer:** White, smooth PVC  
**Reinforcement:** Polyester cord  
**External layer:** Blue, smooth PVC  
**Working temp.:** From -15°C up to +100°C  
 (with peaks up to +120°C)

Flexible hose used for washing applications (cold and hot water) and slightly aggressive chemicals. External layer is resistant to animal and vegetable fats. Recommended for food industry. In compliance with European Directive 1935/2004 CE and 2007/19/CE (stimulant A, B and C). To be used with crimped THERMOCLEAN fittings.

code	I.D. [mm]	O.D. [mm]	working pressure 20°C/100°C [bar]	bursting pressure 20°C/100°C [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
TR-THERMO100-013	13	22	30/15	90/45	40	0.31	40
TR-THERMO100-016	16	25	30/15	90/45	47.5	0.36	40
TR-THERMO100-019	19	28	30/15	90/45	57.5	0.41	40
TR-THERMO100-025	25	34	26/13	78/39	75	0.52	40



#### Fittings for THERMOCLEAN hoses

For THERMOCLEAN hoses we can use hydraulic fittings (TI-Z...) along with industrial ferrules (TI-L...) or special fittings (hygienic finish) with integrated ferrule made of AISI 304. Fittings with different threads, material or for different diameters are also available.

code	BSP thread size [inch]	hose I.D. [mm]
TR-THERMO-12-BZ140-08SS	1/2	12 ÷ 13

## CLEANING AND WASHING - low pressure








### NiTO water spray guns

picture	code	connection	description
 <p><b>NiTO LIGHT DUTY</b></p>	NT-28002A8	3/4" BSP female thread (with 5/8" and 3/4" hose tail)	NiTO LIGHT DUTY economical, lightweight water spray gun with back trigger. Made of brass, cover of blue polyurethane. Gun with adjustable outlet nozzle and smooth flow control. Max. working press.: 8 bar. Max. working temp.: +80°C. Weight: about 0.26 kg.
 <p><b>NiTO I</b></p>	NT-53800A1	1/2" NiTO plug *	NiTO I general purpose, lightweight, high quality water spray gun. Highly durable black plastic cover, chromium-plated brass nozzle. Adjustable outlet nozzle, smooth flow control and trigger lock. Max. working press.: 6 bar (+40°C), 4 bar (+60°C). Max. working temp.: +60°C. Weight: about 0.3 kg. Flow rate: 8.5+10 l/min (3 bar).
	NT-63820A1	3/4" NiTO plug *	
	NT-59800A1	1/2" NiTO CLICK plug*	
	NT-53805A5	1/2" BSP female thread	
	NT-53802A5	1/2" BSP male thread	
 <p><b>NiTO ERGO</b></p>	NT-40525A3	1/2" NiTO plug *	Ergonomic NiTO ERGO hot water spray gun. Highly durable black plastic cover, chromium-plated brass nozzle. Adjustable outlet nozzle, smooth flow control and trigger lock. Max. working press.: 12 bar. Max. working temp.: +80°C. Weight: about 0.5 kg. Flow rate: 50 l/min (5 bar).
 <p><b>NiTO HEAVY DUTY</b></p>	NT-30000A0	1/2" BSP female thread	NiTO HEAVY DUTY industrial water spray gun. Brass body, insulated stainless steel trigger. Blue EPDM rubber cover. Adjustable outlet nozzle, smooth flow control and trigger lock. Max. working press.: 25 bar Max. working temp.: +80°C. Weight: about 1.1 kg. Flow rate: 25+42 l/min (5 bar).
 <p><b>NiTO II</b></p>	NT-30550A3	3/4" BSP female thread	NiTO II industrial, high quality, ergonomic water spray gun. Highly durable, impact resistant plastic cover. Smooth flow control and trigger lock. Interchangeable outlet nozzles. Max. working press.: 25 bar. Max. working temp.: +90°C. Weight: about 0.7 kg. Flow rate with a standard nozzle 40 l/min (5 bar).
	NT-30210A0	-	Set of outlet nozzles for NiTO II water spray gun. Nozzles 20, 30 and 60 l/min (5 bar), made of brass. 3 mm hex wrench to mount the nozzles.

\* - NiTO quick release couplings - see section „Brass quick release couplings for water“




## CLEANING AND WASHING - low pressure

### AKBO water spray guns

picture	code	version	description
	AK-MN001-BL	standard, blue	<p>AKBO HEAVY DUTY water spray gun made of brass. Stainless steel trigger, EPDM rubber cover, EPDM sealing. Adjustable outlet nozzle, smooth flow control and trigger lock. Connection: 1/2" BSP female thread. Version with a trigger guard protects against accidental water discharge and against damage.</p> <p>Max. working press.: 24 bar. Max. working temp.: +95°C. Weight: about 0,87 kg. Flow rate: 30 l/min (5 bar), 75 l/min (24 bar).</p>
	AK-MNP01-BL	with trigger guard, blue	
	AK-MBP01-BK	with trigger guard, increased flow rate (BIG FLOW), black	
	AK-RN001-BL	standard, blue	<p>BIG FLOW increased flow rate version: 48 l/min (5 bar), 120 l/min (24 bar).</p>
	AK-RN001-W	standard, white	
	AK-RNP01-BL	with trigger guard, blue	
	AK-RNP01-W	with trigger guard, white	
	AK-RB001-BK	increased flow rate (BIG FLOW), black	
	AK-RN002-BL-LAT	can be sterilised	

## CLEANING AND WASHING - low pressure

### AKBO water spray guns

picture	code	version	description
	AK-RHP01-R	insulated, with trigger guard, red	<p>AKBO HEAVY DUTY spray gun intended for hot water. Made of stainless steel. EPDM rubber cover, Viton sealing. PTFE-air insulated handle and trigger guard for safe operation. Adjustable outlet nozzle, smooth flow control and trigger lock.</p> <p>Connection: 1/2" BSP female thread .</p> <p>Working press.: 24 bar.</p> <p>Max. working temp.: +95°C.</p> <p>Weight: about 0.97 kg (1.2 kg version with lance).</p> <p>Flow rate: 30 l/min (5 bar), 70 l/min (24 bar).</p> <p>Increased flow rate version: 48 l/min (5 bar), 120 l/min (24 bar).</p>
	AK- RHPB1-R	insulated, with trigger guard, increased flow rate (BIG FLOW), red	
	AK-RHP02-R-L40	insulated, with trigger guard, 40 cm lance, red	
 	AK-RNP01-BK-EX	with trigger guard, black	<p>AKBO HEAVY DUTY water spray gun for application in potentially explosive atmosphere, ATEX zone 1 and 2. Approved by TÜV. Made of AISI 316 stainless steel, EPDM rubber cover, Viton sealing. Adjustable outlet nozzle, smooth flow control and trigger lock.</p> <p>Connection: 1/2" BSP female thread.</p> <p>Working press.: 24 bar.</p> <p>Max. working temp.: +60°C.</p> <p>Weight: about 0.97 kg.</p> <p>Flow rate: 30 l/min (5 bar), 70 l/min (24 bar).</p>
	AK-NN001-BL	lightweight, blue	<p>AKBO lightweight water spray gun made of glass fibre reinforced PA6 polyamide. Stainless steel valve and lever, EPDM rubber cover, EPDM and Viton sealing. Smooth flow control and trigger lock. Compliant with FDA. Suitable for the food industry.</p> <p>Connection: 1/2" BSP female thread.</p> <p>Working press.: 12 bar.</p> <p>Max. working temp.: +50°C.</p> <p>Weight: about 0.48 kg.</p> <p>Flow rate: 30 l/min (5 bar), 70 l/min (24 bar).</p>
	AK-RBT01-BL-U	standard, blue	<p>Stainless steel water spray gun with back trigger. EPDM rubber cover, Viton sealing. Adjustable outlet nozzle, smooth flow control and trigger lock.</p> <p>Connection: 1/2" NPT female thread.</p> <p>Max. working press.: 24 bar.</p> <p>Max. working temp.: +95°C.</p> <p>Weight: about 0.87 kg.</p> <p>Flow rate: 28 l/min (5 bar), 58 l/min (15 bar).</p> <p>Increased flow rate version: 48 l/min (5 bar), 90 l/min (15 bar).</p>
	AK-RBTB1-BL-U	increased flow rate (BIG FLOW), blue	




## CLEANING AND WASHING - low pressure

### Adjustable nozzles

#### NiTO adjustable nozzles

picture	code	connection	material	description
	NT-53750A3	1/2" NiTO plug	chromium plated brass	NiTO adjustable nozzles, adjusted by turning. Designed for 1/2" and 3/4" hoses. Connection: NiTO quick release plug (see section „INDUSTRIAL FITTINGS - quick release couplings“), BSP thread and hose tail. Working press.: up to 25 bar.
	NT-63750A3	3/4" NiTO plug	chromium plated brass	
	NT-20300A9	3/4" female thread	nickel-plated brass	
	NT-20000A4	15/20 mm hose tail	brass	
	NT-57140A1	1/2" NiTO plug	chromium plated brass, plastic	



#### HANDIFIGHTER adjustable nozzles

picture	code	connection	description
	IN-59481-020 (short)	3/4" female thread	Industrial water nozzle with adjustable outlet. EPDM rubber ring protects against mechanical damage. Material: brass. Cover: highly durable plastic Nozzle: 7 mm. Working press.: 16 bar. Flow rate: 75 l/min (6 bar).\
	IN-59481-120 (short)	19 (20) mm hose tail	
	IN-59481-220 (long)	3/4" female thread	
	IN-59481-225 (long)	1" male thread	
	IN-59482-020 (short)	3/4" male thread	Industrial water nozzle with adjustable outlet. EPDM rubber ring protects against mechanical damage. Material: brass. Cover: highly durable plastic Nozzle: 10 mm. Working press.: 16 bar. Flow rate: 150 l/min (6 bar).
	IN-59482-125 (short)	25 mm hose tail	
	IN-59482-220 (long)	3/4" female thread	
	IN-59482-225 (long)	1" male thread	

## CLEANING AND WASHING - low pressure

### Adjustable nozzles


#### AKBO Heavy Duty adjustable nozzle

picture	code	material	description
	AK-MSH02-BL	brass	Industrial water nozzle with adjustable outlet. Used in the food industry, meat and fish processing plants, breweries and beverage production, industrial kitchens, dairies. Cover and seals: EPDM rubber. Connection: 1/2" BSP female thread. Working press.: 16 bar. Working temp.: up to +80°C. Flow rate: 110 l/min (5 bar), 150 l/min (16 bar). Colours - code marking: BL - blue, R - red, W - white.
	AK-MSH02-R		
	AK-MSH02-W		
	AK-RSH02-BL	stainless steel	
	AK-RSH02-R		
	AK-RSH02-W		
	AK-RSHW2-W		

#### WATER SAVER bendable nozzle

picture	code	diameter / flow rate (4.5 bar)	material	description
	AK-WMS01	- 13 l/min	brass	Robust adjustable nozzle designed for washdown applications and cleaning with water. Water flow is controlled by bending the rubber nozzle with one hand. When the nozzle is not bent, the flow is shut off thus saving water and time. It is extremely resistant to damage (by being stepped on or run over by a car etc.). Nozzle material: black NBR rubber. Length: 230 mm. Connection: 3/4" BSP female thread. Working press.: up to 7 bar. Working temp.: up to +65°C (with peaks +100 °C).
	AK-WMM01	13 mm 23 l/min		
	AK-WML01	9 mm 23 l/min		
	AK-WMR01	4.5 mm 17 l/min		
	AK-WRS01	- 13 l/min	stainless steel	
	AK-WRM01	13 mm 23 l/min		
	AK-WRL01	9 mm 23 l/min		
	AK-WRR01	4.5 mm 17 l/min		

#### BLUE NOZZLE bendable nozzle

picture	code	description
	AK-WMS01	Economical adjustable nozzle designed for washdown applications and cleaning with water. Water flow is controlled by bending the rubber nozzle with one hand. When the nozzle is not bent, the flow is shut off thus saving water and time. It is extremely resistant to damage (by being stepped on or run over by a car etc.). Material: brass, blue NBR rubber. Length: 230 mm. Connection: 3/4" BSP female thread. Working press.: up to 10 bar. Flow rate: 13,5 l/min at 2,5 bar press. Working temp.: up to +65°C Weight: 0,28 kg.

## CLEANING AND WASHING - low pressure

### Foaming, washdown and detergent dispensing devices

Cleaning with water, with cleaning agent and detergent solution, cleaning with foam and disinfection are all very common, but particularly popular in the food industry, trade and services. Multifunctional guns equipped with interchangeable lances and nozzles of different flow characteristics are used for spraying with cleaning agent, foaming and washdown applications. Special dosing devices are utilised to obtain the correct concentration of a cleaning agent but can also be used as foaming devices.

#### Multifunctional NiTO COMBI spray guns to mount lances and nozzles, nozzles and lances

picture	code	connection	description
	NT-53105A1	1/2" NiTO plug *	NiTO I COMBI water spray gun with 1/2" * NiTO quick release coupling on the outlet to connect a lance. Cover in highly durable plastic, quick release coupling in chromium-plated brass. Smooth flow control and trigger lock. Max. working press.: 6 bar (+40°C), 4 bar (+60°C). Max. working temp.: +60°C. Weight: about 0,3 kg. Flow rate: 8,5-10 l/min (3 bar).
	NT-59105A1	1/2" NiTO CLICK plug *	
	NT-53205A1	1/2" BSP female thread	
	NT-53305A1	1/2" BSP male thread	
	NT-40803A3	1/2" NiTO plug *	NiTO ERGO COMBI water spray gun with 1/2" * NiTO quick release coupling on the outlet to connect a lance. Cover in highly durable plastic, quick release coupling in chromium-plated brass. Smooth flow control and trigger lock. Max. working press.: 12 bar. Max. working temp.: +80°C. Weight: about 0,5 kg. Flow rate: 50 l/min (5 bar).
	NT-30080A3	3/4" BSP female thread	NITO II COMBI water spray gun with 1/2" * NiTO quick release coupling on the outlet to connect a lance. Cover in highly durable plastic, quick release coupling in chromium-plated brass. Smooth flow control and trigger lock. Max. working press.: 25 bar. Max. working temp.: +90°C. Weight: about 0,7 kg. Flow rate: 40 l/min (5 bar).
	NT-57140A1	1/2" NiTO plug *	Short adjustable nozzle made of chromium-plated brass and plastic.
	NT-57076A3	1/2" NiTO plug *	17 cm lance, with small nozzle, plastic, black.
	NT-57096A3	1/2" NiTO plug *	17 cm lance, with large nozzle, plastic, blue.

\* - NiTO quick release couplings - see section „INDUSTRIAL FITTINGS - quick release couplings“

## CLEANING AND WASHING - low pressure

### Foaming, washdown and detergent dispensing devices

#### NiTO Clean sets for foaming, washdown

Foam cleaning gives better results and is more effective and economical than traditional methods. A layer of foam is sprayed over the surface to be cleaned using NiTO CLEAN device. The device consists of NiTO gun in COMBI version, container for chemical agent with injector and dosing nozzles. The cleaning and foaming agent is fed from the container by the nozzles of selected size (from 0.4% to 10% concentration of the chemical agent) then flows through the injector where air is taken in and foam stream is created on the outlet of the injector nozzle. When the cleaning action is completed, the foam is rinsed with water using the gun with a suitable nozzle attached.

picture	code	container capacity [l]	description
	NT-57087A1	1.4	Washdown and foaming set: NITO I COMBI spray gun (NT-53105A1), cleaning agent container with foam injector, suction hose and a set of dosing nozzles, 17 cm lance with wash nozzle. Max. working press.: 6 bar. Max. working temp.: +40°C.
	NT-57086A1	2.5	
	NT-40805A3	1.4	Washdown and foaming set: NITO ERGO COMBI spray gun, cleaning agent container with foam injector, suction hose and a set of dosing nozzles, 17 cm lance with wash nozzle. Max. working press.: 10 bar. Max. working temp.: +60°C
	NT-40806A3	2.5	
	NT-57006A8	1.4 / 2.5	Foam injector with suction hose.
	NT-40020A3	1.4 / 2.5	Foam injector with NiTO ERGO handle, with suction hose.
	NT-11-50A8	1.4	Container for NiTO Clean set, white.
	NT-11-53A8	2.5	
	NT-57008A8	-	Set of 14 dosing nozzles (0,4% ÷ 10%).
	NT-93189	1.4 / 2.5	Lid for NiTO Clean container.

## CLEANING AND WASHING - low pressure

### Foaming, washdown and detergent dispensing devices

#### Multifunctional AKBO ball valves in a cover

1/2" stainless steel ball valves are intended for multifunctional water applications, cleaning agents, foam. Working pressure up to 60 bar, working temperature up to +95°C. Can be used separately or with quick release couplings to allow connection of various lances and nozzles. Secured against opening when dropped down on the lever. BALR valve comes in a robust EPDM rubber protection cover, which protects the valve but also the floor against damage when the valve dropped .

picture	code	connection 1	connection 2	description
	AK-BALR001-BL	1/2" BSP female thread	1/2" BSP female thread	1/2" valve made of AISI 304 stainless steel, in EPDM rubber protection cover.
	AK-BALRCP1-BL	DN11.8 quick release socket in EPDM* rubber protection cover	1/2" BSP female thread	1/2" valve made of AISI 304 stainless steel, in EPDM rubber protection cover, DN11.8 quick release socket with protector.
	AK-BALRCP1-NBL	DN11.8 quick release socket in nylon* protection cover		
	AK-GRIPR01-BL	1/2" BSP female threadT	1/2" BSP female thread	Handle made of AISI 304 stainless steel coated with EPDM rubber, blue.
	AK-BARRCP2-BL	DN11.8 quick release socket in EPDM* rubber protection cover	1/2" BSP female thread	1/2" valve made of AISI 316 stainless steel, with mechanically protected lever, DN11.8 quick release socket with protector.

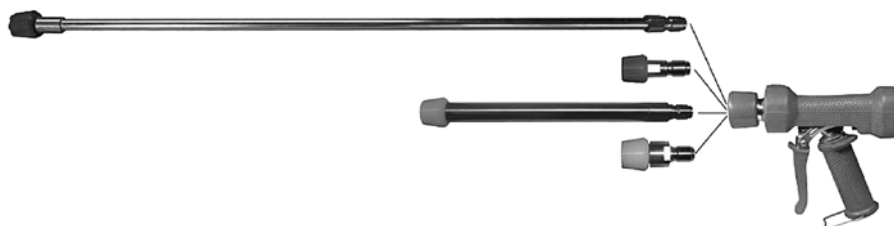
\* - AKBO DN11.8 quick release couplings - see section „INDUSTRIAL FITTINGS - quick release couplings“





## CLEANING AND WASHING - low pressure

### Foaming, washdown and detergent dispensing devices

#### Multifunctional AKBO guns to mount lances and nozzles




Foaming and spraying lances and nozzles extend the range of water spray gun applications. Lances and nozzles can be easily changed, thus adapting the gun to other functions. AKBO water spray guns in this version have 1/2" BSP male thread connection on the outlet or DN11.8 quick release socket in rubber protector, thus making the replacement of nozzles very easy.

picture	code	version	description
	AK-KLML001-BL	brass, no trigger insulation, blue	Water spray gun with 1/2" BSP male thread connector to mount a lance. Smooth flow control, and trigger lock. Stainless steel trigger, EPDM rubber cover, EPDM seals (FDA, DVGW) or Viton (AK-RLCP1- BL, FDA). Connection: 1/2" BSP female thread. Max. working press.: 24 bar. Max. working temp.: +95°C. Weight: about 0,84 kg. Flow rate: 30 l/min (5 bar), 75 l/min (24 bar).
	AK-CL001-BL	chromium-plated brass, insulated trigger, blue	
	AK-RL001-BL	AISI 316 stainless steel, insulated trigger, blue	
	AK-KLMCP1-BL	brass, no trigger insulation, blue	Foam, spray and disinfection gun with DN 11.8* quick release socket on the outlet to mount a lance. Smooth flow control, and trigger lock. Stainless steel trigger, EPDM rubber cover, EPDM seals (FDA, DVGW) or Viton (AK-RLCP1- BL, FDA). Connection: 1/2" BSP female thread. Max. working press.: 24 bar. Max. working temp.: +95°C. Weight: about 0,9 kg. Increased flow rate for better foam quality, automatic flow shut-off when the trigger is released.
	AK-CLCP1-BL	chromium-plated brass, insulated trigger, blue	
	AK-RLCP1-BL	stainless steel, insulated trigger, blue	

\* - AKBO DN11.8 quick release couplings - see section „INDUSTRIAL FITTINGS - quick release couplings”

#### Lightweight foam gun
















picture	code	version	description
	AK-NLFW2	polyamide, no trigger insulation, blue	Lightweight foaming and washdown gun made of glass fibre reinforced polyamide. Complete with a flat foam nozzle. Stainless steel trigger, spring and stem of the valve, EPDM and Viton sealing. EPDM rubber cover. Connection: 1/2" BSP female thread. Max. working press.: 12 bar. Max. working temp.: +50°C. Weight: about 0,66 kg.

## CLEANING AND WASHING - low pressure

### Foaming, washdown and detergent dispensing devices

#### AKBO lances and nozzles for guns and valves

Foam and spray lances and nozzles extend the field of application of water spray guns. The lances and nozzles can be replaced easily thus adapting the gun to serve many different functions. AKBO water spray guns in this version have a quick release coupling with 1/2" BSP male thread on the outlet or a socket of DN11.8 quick release coupling in rubber cover to facilitate replacement of nozzles..

picture	code	length [cm]	description
	AK-LANCM22-F	22	Stainless steel lance, 2 x 1/2" BSP female thread.
	AK-LANCM50-F	50	
	AK-LANCM22-A	22	Stainless steel lance, 1/2" BSP female thread, with DN11.8* quick release plug.
	AK-LANCM50-A	50	
	AK-LANCM60-A	60	
	AK-LANCM22-NA-NW	22	Stainless steel lance, with 1/2" 50° foam nozzle 200 l/min in white nylon protector, with DN11.8* quick release plug.
	AK-LANCM50-NA-NW	50	
	AK-LANCM60-NA-NW	60	
	AK-LANCU05-NA-PB	50	Stainless steel lance, with 1/4" 25° spray nozzle 30 l/min (20 bar) in blue rubber protector, with DN11.8* quick release plug.
	AK-LANCU05-NR-PB	50	Stainless steel lance, with 1/4" 25° spray nozzle 30 l/min (20 bar) in blue rubber protector, with 1/2" BSP female thread.
	AK-ADAFN-08-NR-NW	-	50200 foam nozzle (1/2" 50° 200 l/min) in white nylon protector, with DN11.8* quick release plug, stainless steel.
	AK-ADASN-04-2530-BL	-	2530 spray nozzle (1/4" 25° 30 l/min, 20 bar) in blue rubber protector, with DN11.8* quick release short plug, stainless steel.
	AK-ADAPN-04-2530-BL	-	2560 spray nozzle (1/4" 25° 60 l/min, 20 bar) in yellow rubber protector, with DN11.8* quick release short plug, stainless steel.
	AK-ADASN-04-2560-Y	-	2560 spray nozzle (1/4" 25° 60 l/min, 20 bar) in yellow rubber protector, with DN11.8* quick release short plug, stainless steel.
  <b>1</b> <b>2</b>	AK-NOZ2520 AK-NOZ2560 AK-NOZ50200	-	1. Stainless steel nozzle: - 2520 (1/4" 25° 20 l/min, 20 bar). - 2560 (1/4" 25° 60 l/min, 20 bar). - 50200 (1/2" 50° 200 l/min).
	AK-NIP5025-R	-	2. Adapter 1/4" BSP female thread / 1/2" BSP female thread, stainless steel.
  	AK-NOPRON-08-W AK-NOPROT-04-BL AK-NOPROT-04-Y AK-NOPROT-04-G AK-NOPROT-04-BK AK-NOPROT-04-R	-	1/2" nozzle protectors (W - white nylon) and 1/4" (rubber: BL - blue, Y - yellow, G - green, BK - black, R - red).
	AK-LANFA02	-	Flat plastic foam nozzle with DN11.8* quick release plug.

\* - AKBO DN 11.8 quick release couplings - see section „INDUSTRIAL FITTINGS - quick release couplings“

## CLEANING AND WASHING - low pressure

### Foaming, washdown and detergent dispensing devices

#### AKBO multifunctional guns to mount lances and nozzles



Multifunctional AKBO MNAP2-BL gun with a special quick release coupling on the outlet, with stainless steel nozzle guard. This gun is suitable to:

- apply foam on a surface (gun with a foam nozzle, optionally with a lance, fed with cleaning agent and foaming agent water solution),
- apply foam on a surface (gun with cleaning and foaming agent, fed with water),
- wash with a stream of water controlled by a gun,
- spray (e.g. with a disinfectant) (gun with a lance with a spraying nozzle fed with disinfectant/water solution).

Note: The quick release couplings of the gun and nozzles are not interchangeable with other systems.

picture	code	lance length [cm]	description
	AK-MNAP2-BL	-	Multifunctional AKBO gun MNAP2-BL, with special quick release coupling on the outlet, with stainless steel nozzle guard. The gun is made of brass, trigger of stainless steel. Blue EPDM rubber cover. Connection: gun (inlet) 1/2" BSP female thread. Max. working press.: 24 bar. Max. working temp.: +95°C.
	AK-LANFC01	-	Standard foam nozzle, PVC.
	AK-LANFC30	30	Stainless steel lance with foam nozzle, with quick release coupling to connect a gun.
	AK-LANFC60	60	
	AK-LANFC90	90	
	AK-TANKC01	-	1l container for cleaning and foaming agent, with injector and foam nozzle, with quick release coupling to connect a gun.
	AK-LARC030	30	Stainless steel lance with spray nozzles in protectors, with a quick release coupling to connect a gun. Extendable lance 200 cm.
	AK-LARC060	60	
	AK-LARC090	90	
	AK-LARC200	200	



## High pressure cleaning and washing

Equipment for high pressure cleaning and washing is suitable for both industrial and home application. A wide range of working pressure of the equipment guarantees a solution for each application even at the working pressure as high as 500 bar (for working pressure above 500 bar see chapter HIGH PRESSURE - UHP equipment). The equipment for high pressure cleaning includes complete hose assemblies (with one or two braids) with fittings and bend restrictors, adapters, guns, lances, foam guns, nozzles and heads. Hoses are resistant to weather conditions and abrasion, while the entire high pressure cleaning equipment resists high pressure at temperature reaching +160°C and hot water with detergents. It is also very ergonomic and easy to install.

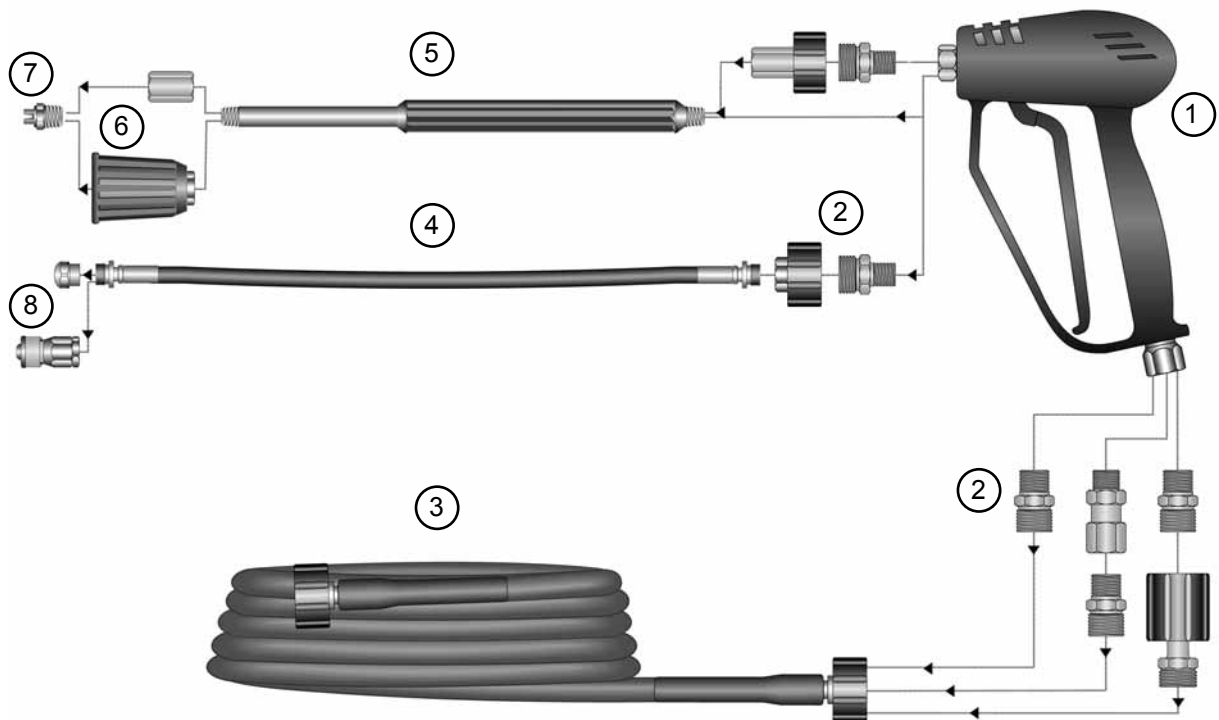
Guns for cold and hot water cleaning (up to 400 bar and +160°C), guns with a non-freezing outlet or an outlet with a quick release coupling socket as well as a scope of adapters, nozzles with varied spray angle (0°, 15°, 25° are 40°) and rotary heads calibrated from 030 to 10 are compatible with the majority of cleaning machines and devices.

A wide range of lances for spray guns:

- material (zinc-plated carbon steel or stainless steel),
- various lengths (from 250 mm to 2000 mm),
- single and double lances,
- different insulations,
- various connections,

allows precise selection to conform to the most stringent operation conditions and ensures safety of the operator.

Assembly of high pressure spray gun accessories



1. Spray gun,
2. Adapters: 1, 2, 3-piece,
3. Hoses supplied as complete hose assemblies with fittings and protectors,
4. Sewer cleaning hose assemblies,
5. Insulated and non-insulated lances,
6. Heads, protectors and adapters,
7. Nozzles for high pressure cleaning equipment,
8. Sewer cleaning nozzles.

## CLEANING AND WASHING - high pressure

### Hoses for high pressure cleaning equipment



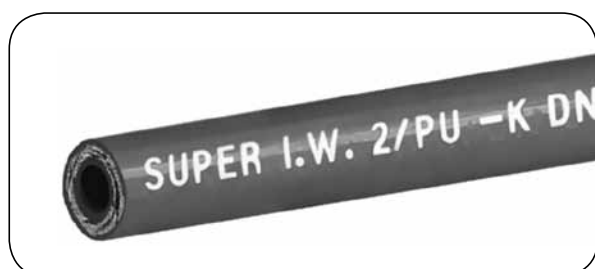
#### SUPER HYDRO WASH 1SC

**Internal layer:** Black synthetic rubber  
**Reinforcement:** One steel wire braid  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -40°C up to +120°C  
(with peaks up to +155°C)

Hose designed for hot water high pressure cleaning equipment. Resistant to detergents, oils, ozone and weather conditions. Excellent resistance to elongation and abrasion.

Assembly: Use Z type fittings - non-skived (IT-127).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-SHWASH1SC-06BL-PU	6.4	12.4	230	900	75	0.18
HW-SHWASH1SC-08BL-PU	7.9	14.1	230	860	85	0.22
HW-SHWASH1SC-10BL-PU	9.5	16.1	210	720	90	0.28



#### SUPER HYDRO WASH 2SC

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Two steel wire braid  
**External layer:** Pinpricked polyurethane  
**Working temp.:** From -40°C up to +120°C  
(with peaks up to +155°C)

Hose designed for hot water high pressure cleaning equipment. Resistant to detergents, oils, ozone and weather conditions. Excellent resistance to abrasion.

Assembly: Use Z type fittings - non-skived (IT-127).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-SHWASH2SC-06BL-PU	6.4	13.2	400	1600	80	0.26
HW-SHWASH2SC-08BL-PU	7.9	14.5	400	1400	95	0.31
HW-SHWASH2SC-10BL-PU	9.5	17	400	1320	105	0.37

## CLEANING AND WASHING - high pressure

### Hoses for high pressure cleaning equipment



#### STAR WASH 500

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Two steel wire braid  
**External layer:** Black, pinpricked synthetic rubber  
**Working temp.:** From -10°C up to +155°C

Hose designed for hot water high pressure cleaning equipment. Resistant to detergents, oils, ozone and weather conditions.

Assembly: Use Z type (series 500) fittings - non-skived (IT-140).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
SO-STARWASH500-06	6.6	13.1	500	1600	75	0.28
SO-STARWASH500-08	8.3	14.5	500	1600	60	0.34
SO-STARWASH500-10	9.9	17.1	500	1540	70	0.44
SO-STARWASH500-13	13	20.7	500	1380	90	0.54

This hose is also supplied as a hose assembly complete with fittings and bend restrictors. Standard fittings M22x1.5 female thread and 3/8" BSP female thread. Other fittings available on request.



Code structure of a complete hose assembly:

#### SO-STARWASH500-P1-10-15

**SO** - stands for TUBES INTERNATIONAL® hose group

**STARWASH500** - name of the hose

**P1** - fittings 2 x M22x1.5 female thread; P2 - fittings 2 x 3/8" BSP female thread; P3 - fittings M22x1.5 female thread / 3/8" BSP female thread

**10** - hose I.D. - DN10

**15** - hose assembly length given in meters - 15 m



## CLEANING AND WASHING - high pressure

### Hoses for high pressure cleaning equipment



#### AQUAWASH 1SN

**Internal layer:** Black synthetic rubber  
**Reinforcement:** One steel wire braid  
**External layer:** Black or blue synthetic rubber  
**Working temp.:** From -40°C up to +160°C

Hose designed for hot and cold water high pressure cleaning equipment. Resistant to abrasion, ozone and detergents. Not suitable for steam cleaning.

Standards: EN 1829-2:2008, EN 853 1SN - dimensional compliance.

Assembly: Use Z type fittings - non-skived (IT-4).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-AQUA1SN-06BK	6.4	13.2	250	900	100	0.23
HW-AQUA1SN-08BK	7.9	15	250	850	115	0.28
HW-AQUA1SN-10BK	9.5	17.3	250	825	130	0.36
HW-AQUA1SN-12BK	12.7	20.6	210	770	180	0.42

Code example:

- black hose: HW-AQUA1SN-06BK

- blue hose: HW-AQUA1SN-06BL



#### AQUAWASH 2SN

**Internal layer:** Black synthetic rubber  
**Reinforcement:** Two steel wire braid  
**External layer:** Black or blue synthetic rubber  
**Working temp.:** From -40°C up to +160°C

Hose designed for hot and cold water high pressure cleaning equipment. Resistant to abrasion, ozone and detergents. Not suitable for steam cleaning.

Standards: EN 1829-2:2008, EN 853 2SN - dimensional compliance.

Assembly: Use Z type fittings - non-skived (IT-5).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-AQUA2SN-06BK	6.4	14.9	400	1600	100	0.40
HW-AQUA2SN-08BK	7.9	16.7	400	1400	115	0.46
HW-AQUA2SN-10BK	9.5	19.1	400	1300	130	0.55
HW-AQUA2SN-12BK	12.7	22.1	400	1200	180	0.64

Code example:

- black hose: HW-AQUA2SN-06BK

- blue hose: HW-AQUA2SN-06BL

# CLEANING AND WASHING - high pressure

## Hoses for high pressure cleaning equipment



### HYDROWASH / 1

**Internal layer:** Black synthetic rubber

**Reinforcement:** One steel wire braid

**External layer:** Black or blue synthetic rubber (pinpricked)

**Working temp.:** From -40°C up to +150°C

Hose designed for hot water pressure cleaning equipment. Internal layer resistant to detergents, external layer to abrasion, oil, ozone and weather conditions.

Standards: ISO 1307.

Use Z type fittings - non-skived (IT-4).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-HWASH1T-06	6.4	13.2	250	1000	100	0.22
HW-HWASH1T-08	8	14.8	250	1000	115	0.26
HW-HWASH1T-10	9.5	17.2	250	1000	130	0.34
HW-HWASH1T-12	12.7	20.4	250	1000	180	0.41

Code example:

- black hose: HW-HWASH1T-06BK

- blue hose: HW-HWASH1T-06BL



### HYDROWASH / 2

**Internal layer:** Black synthetic rubber

**Reinforcement:** Two steel wire braid

**External layer:** Black or blue synthetic rubber (pinpricked)

**Working temp.:** From -40°C up to +150°C

Hose designed for hot water pressure cleaning equipment. Internal layer resistant to detergents, external layer to abrasion, oil, ozone and weather conditions.

Standards: ISO 1307.

Use Z type fittings - non-skived (IT-5).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
HW-HWASH2T-06	6.4	15	400	1600	100	0.38
HW-HWASH2T-08	8	16.5	400	1600	115	0.44
HW-HWASH2T-10	9.5	18.9	400	1600	130	0.55
HW-HWASH2T-12	12.7	22.2	400	1600	180	0.64

Code example:

- black hose: HW-HWASH2T-06BK

- blue hose: HW-HWASH2T-06BL

## CLEANING AND WASHING - high pressure

### Hoses for high pressure cleaning equipment



#### GAUNTLET 1500, 3000, 4500

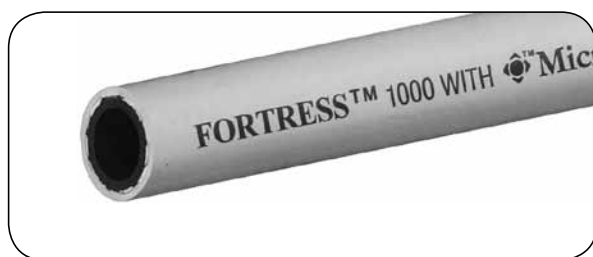
**Internal layer:** Black NBR rubber  
**External layer:** Yellow Carbryn® / NBR compound  
**Working temp.:** From -30°C up to +93°C (1500)  
 From -30°C up to +120°C (3000, 4500)

Hose designed for hot water pressure cleaning equipment in the food industry. External layer resistant to abrasion, oil and animal fat. High flexibility of the hose facilitates operation.

Assembly: Use hydraulic type fittings (TI-Z...) crimped with appropriate ferrules.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
GAUNTLET 1500 (reinforcement: one textile braid)						
GY-GAUNTLET1500-06	6.4	15	103	410	65	0.16
GY-GAUNTLET1500-10	9.5	19.1	103	410	95	0.27
GY-GAUNTLET1500-13	12.7	21.3	83	330	125	0.29
GY-GAUNTLET1500-19	19.1	31.8	103	410	190	0.61
GAUNTLET 3000 (reinforcement: one steel wire braid)						
GY-GAUNTLET3000-10	9.5	17.5	206	824	100	0.36
GY-GAUNTLET3000-13	12.7	20.8	206	824	120	0.48
GAUNTLET 4500 (reinforcement: two steel wire braids)						
GY-GAUNTLET4500-10	9.5	17.5	310	1240	-	0.40
GY-GAUNTLET4500-13	12.7	20.8	310	1240	-	0.51

Mold and fungi, which develop on the surface of hoses can cause unaesthetic stains, unpleasant odour and damage to the external layer. Microban® is a unique layer that protects the hose outer surface against the negative impact of bacteria, mold, and fungi.



#### FORTRESS® 1000, 3000

**Internal layer:** Black NBR rubber  
**External layer:** Blue Carbryn® rubber protected by Microban® cover  
**Working temp.:** From -30°C up to +93°C (1000)  
 From -30°C up to +120°C (3000)

High-quality, flexible, non-staining, kink and twisting resistant hose. Widely used in cleaning equipment in the food, pharmaceutical and cosmetics industry due to Microban® antimicrobial external protection layer.

Assembly: Use hydraulic type fittings (TI-Z...) crimped with appropriate ferrules.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
FORTRESS 1000 (reinforcement: one textile braid)						
GY-FORT1000-10	9.5	19.1	69	276	0.27	152.5
GY-FORT1000-13	12.7	21.8	69	276	0.30	152.5
GY-FORT1000-19	19.1	30.5	69	276	0.63	152.5
FORTRESS 3000 (reinforcement: one steel wire braid)						
GY-FORT3000-06	6.4	13.5	207	828	0.22	152.5
GY-FORT3000-10	9.5	17.5	207	828	0.36	152.5
GY-FORT3000-13	12.7	20.8	207	828	0.48	152.5



## CLEANING AND WASHING - high pressure

### Fittings for high pressure hoses (threaded fittings)



picture	code (carbon steel)	code (stainless steel)	connection	hose I.D. [inch]
	TI-ZKW110-22-04	TI-ZKW110-22-04-SS	M22x1.5	1/4
	TI-ZKW110-22-05	TI-ZKW110-22-05-SS	M22x1.5	5/16
	TI-ZKW110-22-06	TI-ZKW110-22-06-SS	M22x1.5	3/8
	-	TI-ZKW110-22-08-SS	M22x1.5	1/2
	TI-ZKW210-22-05	-	M22x1.5	5/16
	TI-ZKW111-22-04	-	M22x1.5	1/4
	TI-ZKW111-22-05	-	M22x1.5	5/16
	TI-ZKW111-22-06	-	M22x1.5	3/8
	TI-ZKW150-22-04	-	M22x1.5	1/4
	TI-ZKW150-22-05	-	M22x1.5	5/16
	TI-ZKW150-22-06	-	M22x1.5	3/8
	-	TI-ZKMW110-22-06-SW	M22x1.5	3/8
	-	TI-ZKBW110-06-06-SW	GW 3/8" BSP	3/8

## CLEANING AND WASHING - high pressure

### Fittings for high pressure hoses (pipe fittings)

picture	code (carbon steel)	code (stainless steel)	connection	hose I.D. [inch]
	TI-ZKR110-10-04	-	10 mm	1/4
	TI-ZKR110-11-04	-	11 mm	
	TI-ZKR110-10-05	-	10 mm	5/16
	TI-ZKR110-11-05	-	11 mm	
	TI-ZKR110-10-06	-	10 mm	3/8
	-	TI-ZKR180-10-04-SS	10 mm	1/4
	-	TI-ZKR180-10-05-SS	10 mm	5/16
	TI-ZKR180-11-04	TI-ZKR180-11-04-SS	11 mm	1/4
	TI-ZKR180-11-05	TI-ZKR180-11-05-SS	11 mm	5/16

### Fittings for high pressure hoses (fitting inserts and nuts)




picture	code (carbon steel)	code (stainless steel)	connection	hose I.D. [inch] / colour
	TI-ZKW160-22-04	TI-ZKW160-22-04-SS	-	1/4
	TI-ZKW160-22-05	TI-ZKW160-22-05-SS	-	5/16
	TI-ZKW160-22-06	TI-ZKW160-22-06-SS	-	3/8
	TI-ZKW161-22	TI-ZKW161-22-SS	M22x1.5	black
	TI-ZKW162-22	TI-ZKW162-22-SS	M22x1.5	yellow
	TI-ZKW163-22	TI-ZKW163-22-SS	M22x1.5	blue
	TI-ZKW164-22	TI-ZKW164-22-SS	M22x1.5	red





## CLEANING AND WASHING - high pressure

### Protectors of hose fittings for cleaning equipment

<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <b>GK</b>   </div> <div style="text-align: center;"> <b>KK</b>   </div> <div style="text-align: center;"> <b>SK</b>   </div> <div style="text-align: center;"> <b>EK</b>   </div> </div>					
type	colour	DN6 (D1/D2) code	DN8 (D1/D2) code	DN10 (D1/D2) code	DN12 (D1/D2) code
GK	blue	-	17/17 EM-GKB-08	19.5/19.5 EM-GKB-10	23/22.5 EM-GKB-12
	gray	14.6/14.6 EM-GKG-06	17/17 EM-GKG-08	19.5/19.5 EM-GKG-10	23/22.5 EM-GKG-12
	orange	14.6/14.6 EM-GKO-06	17/17 EM-GKO-08	19.5/19.5 EM-GKO-10	23/22.5 EM-GKO-12
	red	14.6/14.6 EM-GKR-06	17/17 EM-GKR-08	19.5/19.5 EM-GKR-10	23/22.5 EM-GKR-12
	black	-	17/17 EM-GKS-08	19.5/19.5 EM-GKS-10	23/22.5 EM-GKS-12
	yellow	14.6/14.6 EM-GKY-06	17/17 EM-GKY-08	19.5/19.5 EM-GKY-10	23/22.5 EM-GKY-12
KK	black	14.5/15 EM-KKS-06	-	-	-
SK	-	14/13 EM-SK-06	-	-	-
EK	-	17 EM-EKS-68	17 EM-EKS-68	-	-







## CLEANING AND WASHING - high pressure

### High pressure MTM water spray guns

picture	code	connection	description
	MH-100345	3/8" female	„SG40" spray gun with 1/4" BSP female thread outlet. Working press.: up to 350 bar. Flow rate: 30 l/min. Working temp.: up to +160°C.
	MH-100408	3/8" male	
	MH-100060	3/8" male	„ASTRA" spray gun with 1/4" BSP female thread outlet. Working press.: up to 350 bar Flow rate: 45 l/min. Working temp.: up to +150°C.
	MH-100007	3/8" female	
	MH-100077	3/8" female - swivel	
	MH-100080	M22x1.5 male - swivel	
	MH-100085	3/8" male	„IRIDE" spray gun with 1/4" BSP female thread outlet. Working press.: up to 310 bar. Flow rate: 30 l/min. Working temp.: up to +150°C.
	MH-100011	3/8" female	
	MH-100096	3/8" female- swivel	
	MH-100097	M22x1.5 - swivel	
	MH-100551	3/8" male	„SG28" spray gun with 1/4" BSP female thread outlet. Working press.: up to 250 bar. Flow rate: 30 l/min. Working temp.: up to +150°C.
	MH-100550	3/8" female	
	MH-100552	M22x1.5 male	
	MH-100553	3/8" female- swivel	
	MH-100554	M22x1.5 male - swivel	
	MH-100503	3/8" male	„SG25" spray gun with 1/4" BSP female thread outlet. Working press.: up to 220 bar. Flow rate: 30 l/min. Working temp.: up to +160°C.
	MH-100502	3/8" female	
	MH-100504	M22x1.5 male	
	MH-100505	3/8" female - swivel	
	MH-100017	3/8" female	„AURA" spray gun with 1/4" BSP female thread outlet. Working press.: up to 180 bar. Flow rate: 25 l/min. Working temp.: up to +150°C.
	MH-100119	3/8" female - swivel	


## CLEANING AND WASHING - high pressure

### High pressure MTM water spray guns

picture	code	connection	description
	MH-100370	3/8" female	Non-freezing spray gun for water „SG35" with 1/4" female thread outlet. Working press.: up to 310 bar. Flow rate: 45 l/min. Working temp.: up to +160°C. Leakage: 1.1 l/min at 3 bar press. * - leakage 1.8 l/min.
	MH-100371*	3/8" female	
	MH-100376	3/8" female - swivel	
	MH-100377*	3/8" female - swivel	
	MH-100506	3/8" female	Non-freezing spray gun for water „SG25" with 1/4" female thread outlet. Working press.: up to 220 bar. Flow rate: 30 l/min. Working temp.: up to +160°C. Leakage: 0.6 l/min at 3 bar press. * - 1.1 l/min. ** - 1.8 l/min.
	MH-100507*	3/8" female	
	MH-100508**	3/8" female	
	MH-100509	3/8" female- swivel	
	MH-100510*	3/8" female- swivel	
	MH-100511**	3/8" female- swivel	
	MH-100199	3/8" female	Non-freezing spray gun for water „AURA" with 1/4" female thread outlet. Working press.: up to 180 bar. Flow rate: 25 l/min. Working temp.: up to +150°C. Leakage: 0.6 l/min at 3 bar press. * - 1.1 l/min. ** - 1.8 l/min.
	MH-100316*	3/8" female	
	MH-100028**	3/8" female	
	MH-100205	3/8" female - swivel	
	MH-100304*	3/8" female - swivel	
	MH-100204**	3/8" female - swivel	
	MH-100378	3/8" female	Non-freezing spray gun for water „SG35" with 1/4" female thread outlet. Working press.: up to 310 bar. Flow rate: 45 l/min. Working temp.: up to +160°C. Leakage: only below 10 bar press.
	MH-100379	3/8" female - swivel	
	MH-100512	3/8" female	Non-freezing spray gun for water „SG25" with 1/4" female thread outlet. Working press.: up to 220 bar. Flow rate: 30 l/min. Working temp.: up to +160°C. Leakage: only below 10 bar press.
	MH-100513	3/8" female - swivel	
	MH-100031	3/8" female	Non-freezing spray gun for water „AURA" with 1/4" female thread outlet. Working press.: up to 180 bar. Flow rate: 30 l/min. Working temp.: up to +160°C. Leakage: only below 10 bar press.
	MH-100221	3/8" female - swivel	

## CLEANING AND WASHING - high pressure

### High pressure MTM water spray guns

picture	code	connection	description
	MH-100465	3/8" female	„SG35" spray gun with KC35 type quick release coupling socket. Working press.: up to 310 bar. Flow rate: 45 l/min. Working temp.: up to +160°C.
	MH-100466	3/8" female - swivel	
	MH-100469	3/8" female	„SG35" spray gun with BC35 type quick release coupling socket. Working press.: up to 310 bar. Flow rate: 45 l/min. Working temp.: up to +160°C.
	MH-100470	3/8" female - swivel	
	MH-100398	M22x1.5 male	„SG35" spray gun with M22x1.5 male outlet. Working press.: up to 310 bar. Flow rate: 45 l/min. Working temp.: up to +160°C.
	MH-100399	M22x1.5 male - swivel	
	MH-100400	3/8" female	„SG35" spray gun with MT8 lance with M22x1.5 female outlet. Lance made of acid-resistant steel. Working press.: up to 310 bar. Flow rate: 45 l/min. Working temp.: up to +160°C. * - lance of zinc-plated steel.
	MH-100401	3/8" male	
	MH-100402	M22x1.5 male	
	MH-100403*	3/8" female	
	MH-100404*	3/8" female	
	MH-100405*	M22x1.5 male	
	MH-100406	3/8" female - swivel	
	MH-100407*	3/8" female - swivel	
	MH-100024	3/8" female	„AURA" spray gun with MT5 lance with M22x1.5 outlet. Lance made of acid-resistant steel. Working press.: up to 180 bar. Flow rate: 30 l/min. Working temp.: up to +160°C. * - lance of zinc-plated steel.
	MH-100168	3/8" male	
	MH-100169	M22x1.5 male	
	MH-100025*	3/8" female	
	MH-100171*	3/8" male	

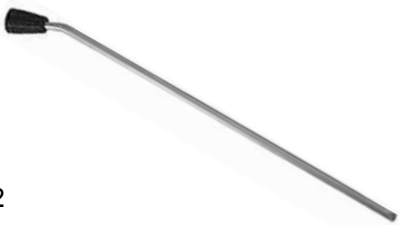






# CLEANING AND WASHING - high pressure

## Accessories for high pressure water spray guns

picture	code	description	connection inlet / outlet	material	pic.		
1	MH-140068	Chassis cleaning lance, 1000 mm Working press.: 280 bar	1/4" BSP male		1		
	MH-140085		1/4" NPT female				
2	MH-140154	MT2 lance 395 mm	1/4" BSP male 1/4" BSP male	stainless steel	2		
	MH-140155	MT2 lance 395 mm		galv. steel			
	MH-140157	IMT3 lance 290 mm		stainless steel	3		
	MH-140158	MT3 lance 290 mm		galv. steel			
	MH-140152	MT5 lance 280 mm		stainless steel	4		
	MH-140249	MT8 lance 380 mm		stainless steel			
	MH-140250	MT8 lance 380 mm		galv. steel			
	3	MH-120173		MT2 lance 700 mm	1/4" BSP male 1/4" NPT female	galv. steel	5
		MH-120176		MT2 lance 900 mm			
MH-120183		MT2 lance 1200 mm					
MH-120188		MT2 lance 1500 mm					
MH-120191		MT2 lance 1700 mm					
MH-120195		MT2 lance 2000 mm					
MH-120225		MT2 lance 700 mm					
MH-120227		MT2 lance 900 mm					
MH-120237		MT2 lance 1200 mm					
4	MH-120240	MT2 lance 1500 mm	coupling 1/4" NPT female	stainless steel	6		
	MH-120243	MT2 lance 1700 mm					
	MH-120247	MT2 lance 2000 mm					
	MH-120008	MT2 lance 700 mm					
	MH-120010	MT2 lance 900 mm					
	MH-120012	MT2 lance 1200 mm					
	MH-120023	MT2 lance 700 mm					
	MH-120025	MT2 lance 900 mm					
	MH-120027	MT2 lance 1200 mm					
5	MH-140010	MT1 lance 250 mm	M22x1.5 male 1/4" NPT female	stainless steel	7		
	MH-140012	MT1 lance 500 mm					
	MH-140014	MT1 lance 700 mm					
	MH-140016	MT1 lance 900 mm					
	MH-140018	MT1 lance 1200 mm					
	MH-140011	MT1 lance 250 mm					
	MH-140013	MT1 lance 500 mm					
	MH-140015	MT1 lance 700 mm					
	MH-140017	MT1 lance 900 mm					
6	MH-140019	MT1 lance 1200 mm		galv. steel			


# CLEANING AND WASHING - high pressure

## Accessories for high pressure water spray guns

picture	code	description	connection inlet / outlet	material	pic.			
	MH-140133	MT1 lance 250 mm	1/4" BSP male 1/4" NPT female	stainless steel	1			
	MH-140134	MT1 lance 500 mm						
	MH-140136	MT1 lance 700 mm						
	MH-140138	MT1 lance 900 mm						
	MH-140140	MT1 lance 1200 mm						
	MH-140141	MT1 lance 250 mm						
	MH-140142	MT1 lance 500 mm		galv. steel				
	MH-140145	MT1 lance 700 mm						
	MH-140146	MT1 lance 900 mm						
	MH-140147	MT1 lance 1200 mm						
	MH-140020	MT6 lance 500 mm	M22x1.5 male 1/4" NPT female	stainless steel	2			
	MH-140022	MT6 lance 700 mm						
	MH-140024	MT6 lance 900 mm						
	MH-140026	MT6 lance 1200 mm		galv. steel				
	MH-140021	MT6 lance 500 mm						
	MH-140023	MT6 lance 700 mm						
	MH-140025	MT6 lance 900 mm						
	MH-140027	MT6 lance 1200 mm						
	MH-120316	MT3 lance 700 mm				1/4" BSP male 1/4" NPT female	stainless steel	3
	MH-120049	MT3 lance 900 mm						
	MH-120332	MT3 lance 1200 mm						
	MH-120339	MT3 lance 1500 mm					galv. steel	
MH-120366	MT3 lance 700 mm							
MH-120371	MT3 lance 900 mm							
	MH-120380	MT3 lance 1200 mm						
	MH-120386	MT3 lance 1500 mm						
	MH-120024	MT2 lance 700 mm				M22x1.5 female / M18x1.5 male	stainless steel	4
	MH-120026	MT2 lance 700 mm						
	MH-120028	MT2 lance 700 mm						
	MH-120030	MT2 lance 700 mm					galv. steel	
MH-120009	MT2 lance 700 mm							
MH-120011	MT2 lance 700 mm							
	MH-120013	MT2 lance 700 mm						
	MH-120015	MT2 lance 700 mm						
	MH-140034	Double lance1/8", 600 mm				M22x1.5 male 1/4" NPT female	stainless steel	5
	MH-140038	Double lance 1/4", 600 mm						
	MH-140039	Double lance1/4", 600 mm						
		MH-140036				Double lance1/8", 600 mm	M22x1.5 male 1/4" NPT female	stainless steel
MH-140040		Double lance1/4", 600 mm						
MH-140041		Double lance1/4", 600 mm						

## CLEANING AND WASHING - high pressure

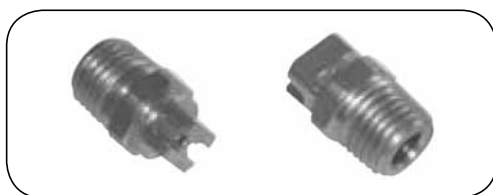
### Accessories for high pressure water spray guns

picture	code	connection inlet / outlet	length [mm]	material	description
	RM-200085220	M22x1.5 male 1/4" NPT female	600	galv. steel	ST-85 adjustable lance. Bending angle: from 20° to 140° Work. press.: 210 bar. Work. temp.: +150°C.
	RM-200085270		600	st. steel	
	RM-200085710	1/4" BSP female 1/4" NPT female	850	galv. steel	
	RM-200085700		1000	galv. steel	
	RM-200085750		1500	galv. steel	
	RM-200085810		850	st. steel	
	RM-200085800		1000	st. steel	
	RM-200085850		1500	st. steel	

picture	code	calibration	connection	description
	RM-200357530	03	1/4" BSP female	Rotary head for MT1, MT2, MT6 lances. Working press.: 100 ÷ 250 bar. Working temp.: +100°C.
	RM-200357535	035		
	RM-200357540	04		
	RM-200357545	045		
	RM-200357550	05		
	RM-200357555	055		
	RM-200357560	06		
	RM-200357565	065		
	RM-200357570	07		
	RM-200357580	08		
	RM-200458635	035	1/4" BSP female	Rotary head for MT1, MT2, MT6 lances. Working press.: 200 ÷ 400 bar. Working temp.: +100°C.
	RM-200458640	04		
	RM-200458645	045		
	RM-200458650	05		
	RM-200458655	055		
	RM-200458660	06		
	RM-200458665	065		
	RM-200458670	07		
	RM-200458680	08		
	RM-200458690	09		
	MH-160152	030	1/4" BSP female	Rotary head for MT1, MT2, MT3, MT6 lances. Working press.: 200 ÷ 400 bar. Working temp.: +100°C.
	MH-160153	035		
	MH-160192	040		
	MH-160154	045		
	MH-160155	050		
	MH-160156	055		
	MH-160193	060		
	MH-160194	065		
	MH-160195	070		
	MH-160196	075		
	MH-160197	080		
	MH-160198	090		
	MH-160157	10		
	MH-160018	**	1/4" BSP female	DUALJET adjustable head for MT1, MT2, MT6 lances. Adjustable spray angle and pressure (low or high). Working press.: 220 bar. Working temp.: +150°C. ** - head without nozzle
	MH-160009	03		
	MH-160010	035		
	MH-160011	045		
	MH-160012	05		
	MH-160013	055		
	MH-160014	065		
	MH-160015	075		
	MH-160016	08		

## CLEANING AND WASHING - high pressure

### Accessories for high pressure water spray guns



#### Lance nozzle

**Material:** Stainless steel

**Thread:** 1/4" NPT male

code	calibration	flow rate / pressure [l/min / bar]	flow angle	code	calibration	flow rate / pressure [l/min / bar]	flow angle
MH-170289	03	11/210	0°	MH-170334	03	11/210	25°
MH-170291	04	11/140, 13/210		MH-170336	04	11/140, 13/210	
MH-170293	05	11/100, 13/140		MH-170337	045	15/210	
MH-170294	055	11/80		MH-170338	05	11/100, 13/140	
MH-170295	06	13/100, 15/140		MH-170339	055	11/80	
MH-170296	065	13/80, 21/210		MH-170340	06	13/100, 15/140	
MH-170297	07	15/100		MH-170341	065	13/80, 21/210	
MH-170299	08	21/140		MH-170342	07	15/100	
MH-170301	10	21/80-100		MH-170344	08	21/140	
MH-170308	03	11/210	15°	MH-170346	10	21/80-100	40°
MH-170310	04	11/140, 13/210		MH-170352	03	11/210	
MH-170311	045	15/210		MH-170354	04	11/140, 13/210	
MH-170312	05	11/100, 13/140		MH-170355	045	15/210	
MH-170313	055	11/80		MH-170356	05	11/100, 13/140	
MH-170314	06	13/100, 15/140		MH-170357	055	11/80	
MH-170315	065	13/80, 21/210		MH-170358	06	13/100, 15/140	
MH-170317	07	15/100		MH-170359	065	13/80, 21/210	
MH-170318	075	15/80		MH-170360	07	15/100	
MH-170319	08	21/140		MH-170361	075	15/80	
MH-170321	10	21/80-100		MH-170362	08	21/140	
-	-	-	-	MH-170364	10	21/80-100	



#### HYDROJET lance nozzle

**Material:** Stainless steel

**Thread:** 1/4" NPT male

code	calibration	flow rate / pressure [l/min / bar]	flow angle	code	calibration	flow rate / pressure [l/min / bar]	flow angle
MH-170216	03	11/210	0°	MH-170218	03	11/210	25°
MH-170224	04	11/140, 13/210		MH-170226	04	11/140, 13/210	
MH-170228	045	15/210		MH-170230	045	15/210	
MH-170232	05	11/100, 13/140		MH-170234	05	11/100, 13/140	
MH-170236	055	11/80		MH-170238	055	11/80	
MH-170240	06	13/100, 15/140		MH-170242	06	13/100, 15/140	
MH-170244	065	13/80, 21/210		MH-170246	065	13/80, 21/210	
MH-170602	07	15/100		MH-170604	07	15/100	
MH-170606	075	15/80		MH-170608	075	15/80	
MH-170610	08	21/140		MH-170612	08	21/140	
MH-170626	10	21/80-100	15°	MH-170628	10	21/80-100	40°
MH-170217	03	11/210		MH-170219	03	11/210	
MH-170225	04	11/140, 13/210		MH-170227	04	11/140, 13/210	
MH-170229	045	15/210		MH-170231	045	15/210	
MH-170233	05	11/100, 13/140		MH-170235	05	11/100, 13/140	
MH-170237	055	11/80		MH-170239	055	11/80	
MH-170241	06	13/100, 15/140		MH-170243	06	13/100, 15/140	
MH-170245	065	13/80, 21/210		MH-170247	065	13/80, 21/210	
MH-170603	07	15/100		MH-170605	07	15/100	
MH-170607	075	15/80		MH-170609	075	15/80	
MH-170611	08	21/140		MH-170613	08	21/140	
MH-170627	10	21/80-100		MH-170629	10	21/80-100	



# CLEANING AND WASHING - high pressure

## Accessories for high pressure water spray guns



### Lance nozzle

Material: Stainless steel

code	calibration	flow rate / pressure [l/min / bar]	flow angle	code	calibration	flow rate / pressure [l/min / bar]	flow angle
MH-170894	03	11/210	0°	MH-170930	03	11/210	25°
MH-170895	04	11/140, 13/210		MH-170931	04	11/140, 13/210	
MH-170896	05	11/100, 13/140		MH-170932	045	15/210	
MH-170897	055	11/80		MH-170933	05	11/100, 13/140	
MH-170898	06	13/100, 15/140		MH-170934	055	11/80	
MH-170899	065	13/80, 21/210		MH-170935	06	13/100, 15/140	
MH-170900	07	15/100		MH-170936	065	13/80, 21/210	
MH-170901	08	21/140		MH-170937	07	15/100	
MH-170903	10	21/80-100		MH-170938	08	21/140	
MH-170910	03	11/210		MH-170941	10	21/80-100	
MH-170911	04	11/140, 13/210	15°	MH-170949	03	11/210	40°
MH-170912	045	15/210		MH-170950	04	11/140, 13/210	
MH-170913	05	11/100, 13/140		MH-170951	045	15/210	
MH-170914	055	11/80		MH-170952	05	11/100, 13/140	
MH-170915	06	13/100, 15/140		MH-170953	055	11/80	
MH-170916	065	13/80, 21/210		MH-170954	06	13/100, 15/140	
MH-170917	07	15/100		MH-170955	065	13/80, 21/210	
MH-170918	075	15/80		MH-170956	07	15/100	
MH-170919	08	21/140		MH-170957	075	15/80	
MH-170922	10	21/80-100		MH-170958	08	21/140	
-	-	-	-	MH-170961	10	21/80-100	

1	2	3	code	thread	description	pic.
			MH-240039	M18x1.5 female	Housing adapter	1
			MH-350228	1/4" BSP female M18x1.5 male	Lance adapter	2
			MH-390181	-	O-ring sealing	3

	code	colour	description
	MH-170001	white	Nozzles for DUALJET adjustable head.
	MH-170002	yellow	
	MH-170003	orange	
	MH-170004	red	
	MH-170005	blue	
	MH-170006	black	
	MH-170007	brown	
	MH-170008	green	

# CLEANING AND WASHING - high pressure

## Accessories for high pressure water spray guns



### Foam injector / generator

code	connection	description
MH-140269	1/4" BSP male	1 l container with a brass foam injector. Working press.: 160 bar. Working temp.: +60°C. Max. flow rate: 20 l/min. * - type of a quick release coupling, see the next page.
MH-140286	M22x1.5 male	
MH-140275	BP type plug of quick release coupling*	
MH-140282	BPS type plug of quick release coupling*	
MH-140288	KPS type plug of quick release coupling*	

**Nozzle calibration table**

D	Ø [mm]	working pressure												
		100	110	120	130	140	150	160	175	200	225	250	300	400
02	1.00	4.5	4.7	4.8	5.0	5.3	5.4	5.6	5.9	6.3	6.7	7.0	7.7	8.9
025	1.10	5.6	5.9	6.1	6.4	6.6	6.9	7.1	7.5	8.0	8.5	9.0	9.9	11.4
03	1.18	6.8	7.1	7.4	7.7	8.0	8.3	8.6	9.0	9.6	10.2	10.7	11.8	13.5
035	1.30	7.8	8.2	8.6	8.9	9.2	9.5	9.8	10.3	11.0	11.7	12.3	13.8	15.5
04	1.35	9.4	9.8	10.3	10.7	11.1	11.5	11.9	12.4	13.3	14.1	14.8	16.3	18.7
045	1.40	10.2	10.5	10.9	11.4	11.8	12.2	12.6	13.2	14.1	15.0	15.8	17.4	19.9
05	1.55	11.3	11.8	12.4	12.9	13.4	13.8	14.3	14.9	16.0	16.9	17.9	19.7	22.6
055	1.60	12.4	13.0	13.6	14.1	14.7	15.2	15.7	16.4	17.5	18.6	19.6	21.7	25.0
06	1.72	13.6	14.3	14.9	15.5	16.0	16.7	17.2	18.0	19.2	20.4	21.5	23.7	27.1
065	1.75	14.7	15.4	16.1	16.8	17.4	18.0	18.6	19.4	20.8	22.0	23.2	25.6	29.3
07	1.80	15.8	16.6	17.3	18.0	18.7	19.3	20.0	20.9	22.3	23.7	25.0	27.1	31.3
075	1.90	16.9	17.7	18.5	19.3	20.0	20.7	21.4	22.4	23.9	25.3	26.7	29.4	33.7
08	2.05	18.0	18.9	19.7	20.5	21.3	22.0	22.8	23.8	25.5	27.0	28.5	31.4	35.9
085	2.08	19.1	20.0	20.9	21.8	22.6	23.4	24.1	25.3	27.0	28.6	30.2	34.5	39.8
09	2.10	20.2	21.2	22.1	23.0	23.9	24.7	25.5	26.7	28.6	30.3	31.9	35.1	40.2
10	2.30	22.5	23.6	24.6	25.6	26.6	27.6	28.5	29.8	31.8	33.7	35.6	39.2	44.9


How to select the proper nozzle calibration?

1. knowing the working pressure and flow rate of your device (e.g. 18 l/min - 200 bar).
2. in the first line of the table find the pressure 200 bar, then in the column „200” find the flow rate 17.5 (the closest to 18).
3. from the spot „17.5” move leftwards to the column „D” to read the proper calibration value - 055.

**The incorrect nozzle selection may cause the device to malfunction**

## CLEANING AND WASHING - high pressure

### Accessories for high pressure water spray guns

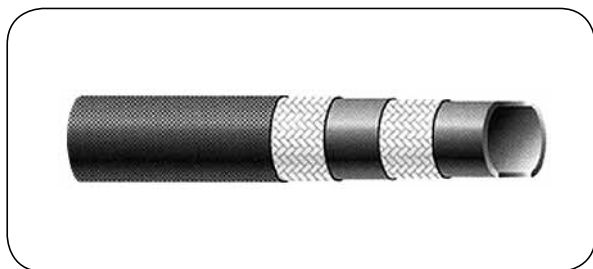
picture	code	connection	description	pic.
	MH-240620	1/4" BSP male	KCS quick release coupling socket. Material: brass, stainless steel. Working press.: 350 bar.	1
	MH-240635	1/4" BSP female	KPS quick release coupling plug. Material: brass, stainless steel. Working press.: 350 bar.	2
	MH-240633	3/8" BSP female	BCS quick release coupling socket. Material: stainless steel. Working press.: 400 bar.	3
	MH-240641	3/8" BSP female	BC quick release coupling socket. Material: nickel-plated brass. Working press.: 310 bar.	
	MH-240634	3/8" BSP female	BPS quick release coupling plug. Material: stainless steel. Working press.: 400 bar.	4
	MH-240642	3/8" BSP female	BP quick release coupling plug. Material: galvanized steel. Working press.: 310 bar.	

code	outlet	description	pic.
MH-160062	1/4" NPT female	HYPERJET head. Inlet: 1/4" BSP female thread. Working press.: up to 250 bar. Working temp.: up to +150°C.	1
MH-160139	1/8" NPT female		
MH-160061	1/4" NPT female	HYPERJET PLUS head. Inlet: 1/4" BSP female thread. Working press.: up to 250 bar. Working temp.: up to +150°C.	2
MH-160137	1/8" NPT female		
MH-220278	1/4" NPT female	Nozzle protector. Inlet: 1/4" BSP female thread. Colour: black (blue version *).	3.
MH-220130*	1/4" NPT female		
MH-220132	1/8" NPT female + 3/8" male		
MH-220133*	1/8" NPT female + 3/8" male		
MH-220134	1/8" NPT female		
MH-220135*	1/8" NPT female		

code	connection	description	pic.
MH-240019	M22x1.5 male / 1/2" BSP male	Adapter.	1
MH-240020	M22x1.5 male / 3/8" BSP male		
MH-240021	M22x1.5 male / 3/8" BSP fem.		
MH-350001	M22x1.5 male / 1/4" BSP male		
MH-240026	M22x1.5 fem. / 1/2" BSP male	3-piece adapter.	2
MH-240027	M22x1.5 fem. / 3/8" BSP male		
MH-240028	M22x1.5 fem. / 3/8" BSP fem.		
MH-240029	M22x1.5 fem. / 1/4" BSP male		
MH-240030	M22x1.5 fem. / 1/4" BSP fem.	2-piece adapter.	3
MH-240031	M22x1.5 fem. / 1/8" BSP fem.		4
MH-240033	M22x1.5 fem. / 1/4" BSP fem.	Adapter.	5
MH-240034	M22x1.5 fem. / 1/4" BSP male		6
MH-240032	M22x1.5 fem. / M22x1.5 fem.	2-piece adapter (2 x O-ring).	7
MH-240024	M22x1.5 male / M22x1.5 male		8
MH-240035	M22x1.5 fem. / 1/4" BSP fem.	3-piece, long adapter.	9
MH-240036	M22x1.5 fem. / 1/4" BSP male		
MH-240037	M22x1.5 fem. / 3/8" BSP male	Long adapter.	
MH-240038	M22x1.5 fem. / M22x1.5 male		
MH-240023	M22x1.5 male / 1/4" BSP fem.		
MH-350001	M22x1.5 male / 1/4" BSP male		

## CLEANING AND WASHING - cleaning of sewage systems

### Sewage cleaning hoses



#### IK 25

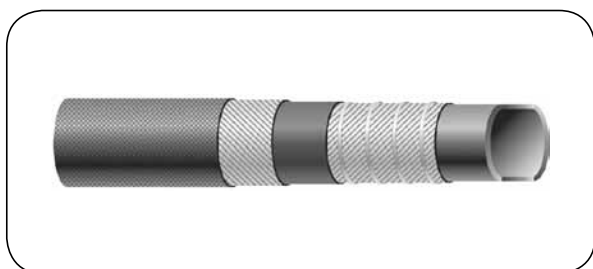
**Internal layer:** Black smooth NBR rubber  
**Reinforcement:** Two textile braids  
**External layer:** Black smooth NR/BR compound  
highly resistant to abrasion  
**Working temp.:** From -35°C up to +80°C

Hose designed for pressure cleaning of sewage systems. Highly resistant to abrasion (EN ISO 6945:2000, max. 0.5 g (100N); DIN 53516:1987 - 40 mm<sup>3</sup>).

Supplied as a complete hose assembly with male or female BSP 60° thread fittings (e.g. code no. of the hose assembly IK 25, Ø1/2", 40 meter long: SP-IK25-68468136-040). Standard length: 40, 60, 80, 100, 120, 160, 180 m. Each hose assembly is pressure tested and delivered with a quality control certificate.

Other fittings and lengths are available - contact TUBES INTERNATIONAL® Technical Department.

code	I.D. [mm]	O.D. [mm]	thread size [inch]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
SP-IK25-68468136-L	13	25	1/2	250	625	70	0.46
SP-IK25-68468196-L	19	31	3/4	250	625	95	0.61
SP-IK25-68468257-L	25	39	1	250	625	110	0.86
SP-IK25-68468328-L	32	48	1.1/4	250	625	150	1.27



#### IAL

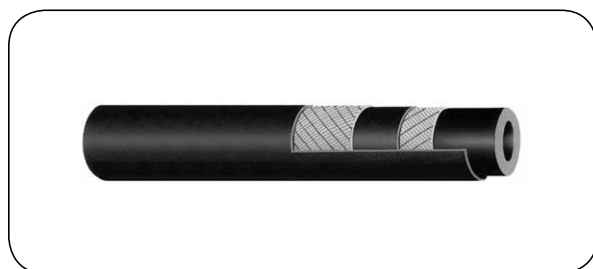
**Internal layer:** Black smooth, antistatic  
**Reinforcement:** NR/SBR/BR compound  
**External layer:** Two textile braids, helix wire  
Black EPDM rubber  
**Working temp.:** From -35°C up to +80°C

Flexible suction-delivery hose intended for sewage cleaning and so used on sewage suction vehicles. Full flow is retained even at the minimum bending radius. Internal and external layer resistant to abrasion. Safety factor 3.15:1. Vacuum 0.9 bar. Standard length: 20, 40 m.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
SP-IAL-56511008	100	116	6	18.9	400	4.70
SP-IAL-56511118	110	126	6	18.9	450	5.20
SP-IAL-56511039	125	144	6	18.9	600	6.40
SP-IAL-56511069	150	169	6	18.9	720	7.50

# CLEANING AND WASHING - cleaning of sewage systems

## Sewage cleaning hoses



### KUKA 250

**Internal layer:** Black, smooth synthetic rubber

**Reinforcement:** Two textile braids

**External layer:** Black, smooth synthetic rubber

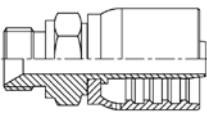
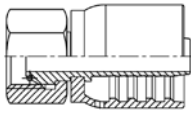
**Working temp.:** From -40°C up to +70°C

Delivery hose designed for high pressure cleaning and flushing of sewage systems. External layer resistant to abrasion, oil mist and weather conditions. Manufactured according to EN ISO 1307 standard.

Assembly: use SL-KUKA250-... (IT-58) fittings.

code	I.D. [mm]	O.D. [mm]	bending radius [mm]	working pressure [bar]	bursting pressure [bar]	weight [kg/m]	standard length [m]
SL-KUKA250-13	12.7	25	65	250	625	0.44	120
SL-KUKA250-16	16	28	75	250	625	0.48	120
SL-KUKA250-19	19	31.6	90	250	625	0.60	120
SL-KUKA250-25	25.4	39.3	100	250	625	0.78	120
SL-KUKA250-32	31.8	48	130	250	625	1.06	120
SL-KUKA250-38	38.1	54	150	250	625	1.25	120

## KUKA 250 hose fittings

picture	code	thread size [inch]	hose I.D. [mm]	spanner size [mm]
Fitting with BSP male thread 	SL-KUKA250-13-BZ110-08	1/2	13	27
	SL-KUKA250-16-BZ110-10	5/8	16	27
	SL-KUKA250-19-BZ110-12	3/4	19	32
	SL-KUKA250-25-BZ110-16	1	25	41
	SL-KUKA250-32-BZ110-20	1.1/4	32	50
Fitting with BSP female thread 	SL-KUKA250-13-BW110-08	1/2	13	27
	SL-KUKA250-16-BW110-08	1/2	16	27
	SL-KUKA250-16-BW110-10	5/8	16	30
	SL-KUKA250-16-BW110-12	3/4	16	32
	SL-KUKA250-19-BW110-12	3/4	19	32
	SL-KUKA250-25-BW110-16	1	25	41
	SL-KUKA250-32-BW110-20	1.1/4	32	50

## CLEANING AND WASHING - cleaning of sewage systems

### Sewage cleaning hoses



#### FLEXY

**Internal layer:** Black smooth synthetic rubber

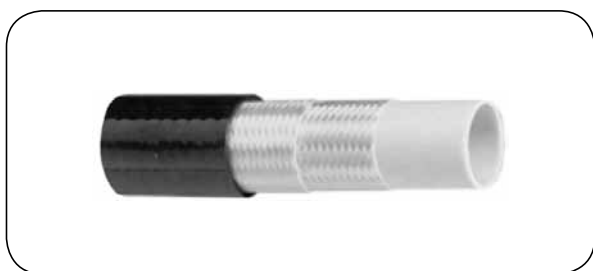
**Reinforcement:** One steel braid

**External layer:** Black smooth synthetic rubber

**Working temp.:** From -40°C up to +100°C

Very flexible hose designed for pressure cleaning of sewage systems. Highly resistant to abrasion. Electrical resistance of the internal and external layer is  $\Omega/m$ . Supplied as a complete hose assembly with fittings. Other types of fittings and lengths are available - contact TUBES INTERNATIONAL® Technical Department.

code	I.D. [mm]	O.D. [mm]	thread size (inlet)	thread size (outlet)	working pressure [bar]	length [m]
RM-420311010	6	10.8	M22x1.5 female	1/4" BSP male	300	10
RM-420311015						15
RM-420311020						20
RM-420311025						25
RM-420311030						30
RM-420342010			1/4" BSP female	1/4" BSP male		10
RM-420342015						15
RM-420342020						20
RM-420342025						25
RM-420342030						30



#### JC 7

**Internal layer:** Thermoplastic polyester

**Reinforcement:** Two polyester braids

**External layer:** Orange polyurethane,  
abrasion resistant

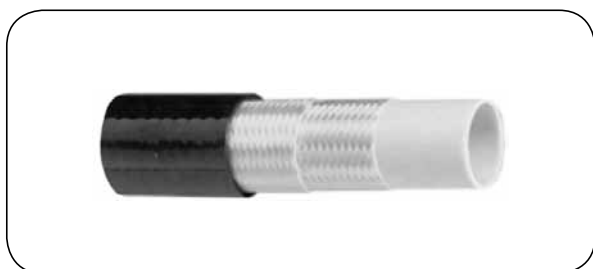
**Working temp.:** From -40°C up to +55°C

Hose designed for high pressure cleaning of sewage systems. Standard length: 80, 100, 120, 150, 180, 200, 250 m. Assembly: use ZC-BPJC type fittings (IT-49).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-JC7-10	9.7	16.5	275	690	55	15.80
ZC-JC7-13	13	22.4	275	690	75	27.70
ZC-JC7-16	16	26.5	220	550	100	37.20
ZC-JC7-19	19.2	29.8	200	500	120	43.10
ZC-JC7-25	25.6	37.3	200	500	150	58.00
ZC-JC7-32	32	46	200	500	235	84.80
ZC-JC7-38	38.2	54	200	500	375	118.6

# CLEANING AND WASHING - cleaning of sewage systems

## Sewage cleaning hoses

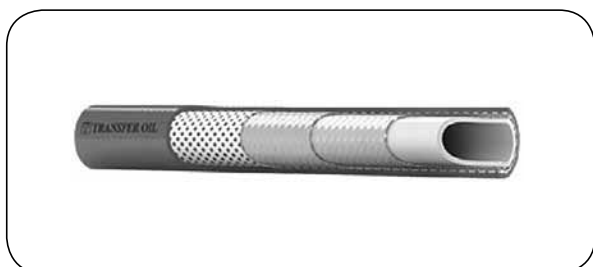


### JC 8

**Internal layer:** Thermoplastic polyester  
**Reinforcement:** Two polyester braids  
**External layer:** Red polyurethane, abrasion resistant  
**Working temp.:** From -40°C up to +55°C

Hose designed for high pressure cleaning of sewage systems. Standard length: 80, 100, 120, 150, 180, 200, 250 m. Assembly: use ZC-BPJC type fittings (IT-49).

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-JC8-03	3.5	8.5	345	862	25	5.70
ZC-JC8-05	4.8	10.5	345	862	30	8.20
ZC-JC8-06	6.4	12.7	345	862	50	10.80
ZC-JC8-10	9.7	16.5	345	862	75	15.70
ZC-JC8-13	13.0	22.4	345	862	100	29.20
ZC-JC8-19	19.2	29.8	250	625	120	46.00
ZC-JC8-25	25.6	37.3	250	625	150	64.30
ZC-JC8-32	32.0	46.0	250	625	235	98.50



### ECOLOGY 210HD / 250HD

**Internal layer:** Polyethylene  
**Reinforcement:** One or two synthetic fibre braids + one braid for cover integration  
**External layer:** Polyurethane  
 - E210HD - blue  
 - E250HD - red  
**Working temp.:** From -40°C up to +60°C

Hose designed for high pressure cleaning of sewage system. Suitable for water-based fluids used for cleaning, scrubbing, etc. Resistant to abrasion and microorganisms, flexible in a full range of working temperatures. Suitable for high humidity working conditions. The external layer is resistant to acids, bases, oil and grease. Not designed to transfer hydraulic fluids and solvents.


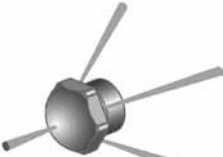

Supplied as a complete hose assembly with specified length "L" with male or female BSP 60° thread fittings (e.g. code no. of the assembly hose E250HN Ø1/2", 40 meter long - TO-E250HD-12-040). Standard length: 40, 60, 80, 100, 120, 150, 180, 200, 240, 300 m.

Other fittings are available - contact TUBES INTERNATIONAL® Technical Department.

code	I.D. [inch]	O.D. [mm]	thread size [inch]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]
TO-E210HD-20-L	3/4	30.0	3/4	210	525	120	0.42
TO-E210HD-25-L	1	38.3	1	210	525	155	0.74
TO-E210HD-32-L	1.1/4	47.4	1.1/4	210	525	240	1.04
TO-E250HD-12-L	1/2	22.3	1/2	250	625	75	0.28
TO-E250HD-20-L	3/4	30.1	3/4	250	625	120	0.47
TO-E250HD-25-L	1	39.6	1	250	625	155	0.80
TO-E250HD-32-L	1.1/4	49.6	1.1/4	250	625	240	1.23

# CLEANING AND WASHING - cleaning of sewage systems

## Accessories - sewage cleaning nozzles


picture	code	thread size	calibration	description	pic.
 1	RM-65105	1/4" BSP female	035	Nozzle intended for unclogging - without a centric hole. Material: acid-resistant steel. Working press.: up to 300 bar. Diameter: Ø19 mm.	1
	RM-65104		04		
	RM-65100		045		
	RM-65108		05		
	RM-65116		055		
	RM-65110		06		
	RM-65140		09		
	RM-65148		12		
	RM-65114		04		
	RM-65112		045	Nozzle intended for unclogging and cleaning - with a centric hole. Material: acid-resistant steel. Working press.: up to 300 bar. Diameter: Ø19 mm.	2
 2	RM-65113		05		
	RM-65115		055		
	RM-65118		06		
	RM-65120		075		
	RM-65125		09		
	RM-65130		10		
	RM-65146		11		
	RM-200049794		04	Rotary nozzle intended for unclogging - without a centric hole. Material of the body: acid-resistant steel, of the rotor: brass. Working press.: up to 150 bar. Diameter: Ø19 mm.	3
	RM-200049795		045		
 3	RM-200049800		05		
	RM-200049805		055		
	RM-200049810		06		
	RM-200049815		07		
	RM-200049820		08		
	RM-65161*		09		
	RM-65162**		12		

\* - Reduced friction. Additional side hole.

\*\* - Unclogging. Additional side and centric hole.



code	type	connection size	number of front holes	number of rear holes	Q [l/min]	min. pipeline diameter [mm]	description
RM-65250001	RD 200	1/4" BSP	3	4	20 ÷ 40	40	Rotary nozzle intended for unclogging - without a centric hole, with replaceable inserts. Material of the body: acid-resistant steel, of the rotor: brass. Working press.: up to 250 bar.
RM-65250002	RD 400	1/2" BSP	3	5	40 ÷ 120	70	
RM-65250003	RD 500	3/4" BSP	3	6	140 ÷ 180	100	
RM-65250004	RD 600	1" BSP	3	8	300 ÷ 360	120	

picture	code	type	connection size	hole calibration [mm]	hexagon size [mm]	description
	RM-65260001	VS 100	M4	0.6 ÷ 1.5	2	RD nozzle inserts. Material : acid-resistant steel. Working press.: up to 500 bar.
	RM-65260002	VS 200	M6	0.6 ÷ 2	2.5	
	RM-65260003	VS 300	M8	0.6 ÷ 2.5	3	
	RM-65260004	VS 400	M10	0.6 ÷ 3.8	4	



## HOSES

Many different hoses, described in chapters "INDUSTRIAL HOSES - air and water" and "INDUSTRIAL HOSES - general purpose" are designed for compressed air. This part of the catalogue focuses only on hoses typical for pneumatics and industrial automatics, designed to be connected with push-in fittings and spiral hoses used to connect pneumatic tools.

## VALVES

Valves are intended for controlling and regulating functions in pneumatic systems. Use examples:

- control of the flow direction of compressed air e.g. distribution valve, check valve,
- control of the flow rate of compressed air (throttle valve),
- control of the pressure of compressed air (pressure reducing valve),
- special purpose valves (pneumatic logic elements, rapid drain valve).

## AIR PREPARATION

The quality of performance of a pneumatic application, service life of its elements and working safety mostly depend on the quality of air preparation.

Air preparation usually involves:

- removal of liquid and solid impurities (performed by filters),
- reduction of compressed air pressure to the required value (pressure reducing valve),
- lubrication of compressed air (lubricators).

Due to the diversification of requirements for FRL (Filter, Regulator, Lubricator) units, TUBES INTERNATIONAL® supplies devices from four series:

- **Syntesi** - extensive application due to modular construction, with connection size from 1/8" to 1",
- **Skillair** - general purpose with connection size from 1/4" to 2",
- **New Deal** - designed for high pressure with connection size from 1/4" to 1",
- **Bit** - designed for assembly just at the final receiver with connection size from 1/8" to 1/4".

## FITTINGS

TUBES INTERNATIONAL® provides:

- Push-in fittings - quick and easy assembly, user friendly. Despite a wide range of available types of push-in fittings, a complete system can be built using just four different types. As a result storage costs are significantly reduced. It is recommended to use hoses made of polyamide or polyurethane with a calibrated outside diameter. Fitting material: nickel-plated brass (up to 16 bar), technopolymer (up to 12 bar). Push-in fittings can be divided into:
  - R series - general purpose, for hoses with outside diameter from 3 to 14 mm,
  - RL FOX series - reduced outside dimensions (e.g. used with small distribution valves, in places where R series is too big to be used), for hoses with outside diameter from 3 to 10 mm,
  - F series- fittings for food industry.
- Fittings with a cutting ring - B series, designed for copper or plastic hose assemblies:
  - max. working pressure: 60 bar,
  - material: nickel-plated brass.
- Screw fittings - C that are screwed onto the plastic hoses and Banjo fittings - D series. Fitting design eliminates the risk of cutting the hose.
- Threaded fittings - A series: (straight, reducing, tee, equal cross, etc.) that extend the range of options when joining installation parts:
  - max. working pressure: 60 bar,
  - material: nickel-plated brass.

## ACTUATORS

Pneumatic actuator is a device that changes compressed air energy into mechanical energy, used to drive mechanisms and machine elements. This group consists of standard actuators according to ISO and VDMA standards, compact, mini and rotary actuators, grippers, guides and slide units.

## INDUSTRIAL PNEUMATICS - hoses



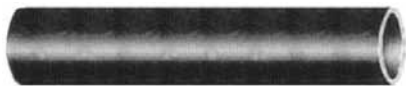
### PE

**Hose material:** LDPE polyethylene

**Working temp.:** From -30°C up to +70°C

Lightweight, flexible hose designed for air, water and other media. Resistant to chemicals, tasteless, for application with food products. Complies with BGA and FDA standards.

code	O.D. [mm]	tolerance [mm]	I.D. [mm]	working pressure [bar]	bending radius [mm]	standard length [m]
NP-PE-04X02	4	± 0.1	2	17	20	50
NP-PE-05X03	5	± 0.1	3	12.5	20	50
NP-PE-06X04	6	± 0.1	4	10	30	50
NP-PE-08X05	8	± 0.1	5	13	40	50
NP-PE-08X06	8	± 0.1	6	7	30	50
NP-PE-10X08	10	± 0.1	8	5.6	40	50
NP-PE-12X09	12	± 0.1	9	8	60	50
NP-PE-12X10	12	± 0.1	10	4.5	60	50
NP-PE-14X10	14	± 0.15	10	8	80	50
NP-PE-16X12	16	± 0.15	12	7	90	50
NP-PE-18X14	18	± 0.15	14	6.2	120	50



### PA 6

**Hose material:** PA 6 polyamide (Nylon)

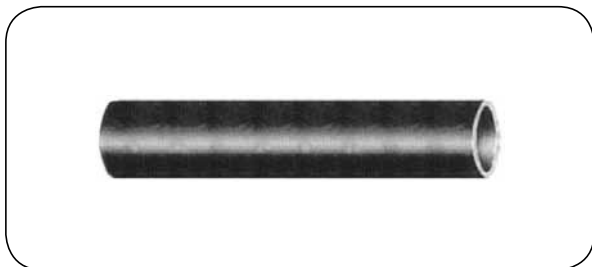
**Working temp.:** From -10°C up to +80°C

Lightweight, flexible hose with calibrated outside diameter, designed for pneumatic, hydraulic, fuel and oil installations, lubrication and chemicals. Available in natural colour.

Standards: DIN 73378.

code	O.D. [mm]	I.D. [mm]	working pressure 20°C [bar]	bending radius [mm]	standard length [m]
SH-PA6-04X02	4	2	40	22	100
SH-PA6-06X04	6	4	25	44	100
SH-PA6-08X06	8	6	18	66	100
SH-PA6-10X08	10	8	14	88	100
SH-PA6-12X08	12	8	25	88	100
SH-PA6-12X10	12	10	11	80	100

## INDUSTRIAL PNEUMATICS - hoses



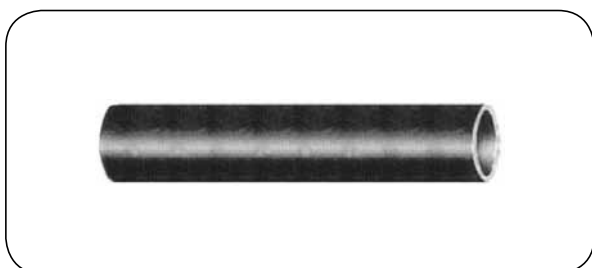
### PA 12 X-HIPHL

**Hose material:** PA 12 polyamide (Nylon)

**Working temp.:** From -55°C up to +100°C  
(for water-based media +70°C)

Lightweight, flexible hose with calibrated outside diameter designed for pneumatic, hydraulic, fuel and oil installations, lubrication and chemicals. Available in a wide range of colours: natural, black, blue, green, red, yellow and orange. Standards: DIN 73378.

code	O.D. [mm]	I.D. [mm]	working press. 23°C [bar]	bursting press. 23°C [bar]	bending radius [mm]	standard length [m]
ZC-PA12H-04X02	4	2	49	147	16	100
ZC-PA12H-05X03	5	3	37	111	20	100
ZC-PA12H-06X04	6	4	29	87	30	100
ZC-PA12H-08X05	8	5	34	102	35	100
ZC-PA12H-08X5,5	8	5.5	27	81	40	100
ZC-PA12H-08X06	8	6	21	63	40	100
ZC-PA12H-10X06	10	6	37	111	55	50
ZC-PA12H-10X7,5	10	7.5	21	63	60	50
ZC-PA12H-10X08	10	8	16	48	60	50
ZC-PA12H-12X08	12	8	29	87	60	50
ZC-PA12H-12X09	12	9	21	63	60	50
ZC-PA12H-14X10	14	10	24	72	75	50
ZC-PA12H-15X12	15	12	16	48	65	50
ZC-PA12H-16X12	16	12	21	63	95	50
ZC-PA12H-18X14	18	14	18	54	100	50
ZC-PA12H-20X16	20	16	16	48	200	50



### PA 11 S40 - imperial size

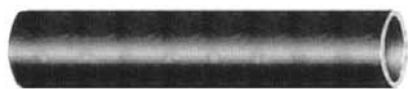
**Hose material:** PA 11 polyamide (Nylon)

**Working temp.:** From -40°C up to +80°C  
(for water-based media +70°C)

Lightweight, flexible hose with calibrated outside diameter designed for pneumatic, hydraulic, fuel and oil installations, lubrication and chemicals. Available in a wide range of colours: natural, black, blue, green, red, yellow and orange. Standards: SAE J 844 (from 1/8" up to 5/16").

code	O.D. [mm]	I.D. [mm]	working press. 23°C [bar]	bursting press. 23°C [bar]	bending radius [mm]	standard length [m]
ZC-PA11-S40-02	3.17	2	23	70	9.4	100
ZC-PA11-S40-02,5	3.96	2.3	28	84	12.7	100
ZC-PA11-S40-03	4.76	3.	28	84	19.1	100
ZC-PA11-S40-04	6.35	4.3	28	84	25.4	100
ZC-PA11-S40-05	7.93	5.9	23	70	31.8	100
ZC-PA11-S40-06	9.52	6.98	21	64	75	100
ZC-PA11-S40-08	12.7	9.53	19	56	110	50

## INDUSTRIAL PNEUMATICS - hoses



### PA 12 S40-PHL

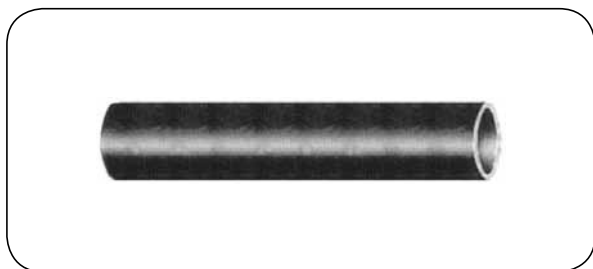
**Hose material:** PA 12 polyamide (Nylon)

**Working temp.:** From -40°C up to +80°C  
(for water-based media +70°C)

Lightweight, flexible hose with calibrated outside diameter designed for pneumatic, hydraulic, fuel and oil installations, lubrication and chemicals. Available in a wide range of colours: natural, black, blue, green, red, yellow and orange. Standards: DIN 73378.

code	O.D. [mm]	I.D. [mm]	working press. 23°C [bar]	bursting press. 23°C [bar]	bending radius [mm]	standard length [m]
ZC-PA12-S40PHL-04X02	4	2	44	132	16	100
ZC-PA12-S40PHL-04X03	4	3	19	56	28	100
ZC-PA12-S40PHL-05X03	5	3	33	100	20	100
ZC-PA12-S40PHL-05X035	5	3.5	23	70	25	100
ZC-PA12-S40PHL-06X04	6	4	28	84	30	100
ZC-PA12-S40PHL-08X05	8	5	32	96	35	100
ZC-PA12-S40PHL-08X06	8	6	20	60	40	100
ZC-PA12-S40PHL-10X06	10	6	33	100	55	50
ZC-PA12-S40PHL-10X07	10	7	23	70	58	50
ZC-PA12-S40PHL-10X075	10	7.5	20	60	60	50
ZC-PA12-S40PHL-10X08	10	8	16	48	60	50
ZC-PA12-S40PHL-12X08	12	8	28	84	60	50
ZC-PA12-S40PHL-12X09	12	9	20	60	60	50
ZC-PA12-S40PHL-12X10	12	10	12	36	85	50
ZC-PA12-S40PHL-14X10	14	10	23	68	75	50
ZC-PA12-S40PHL-14X11	14	11	16	48	85	50
ZC-PA12-S40PHL-15X12	15	12	16	48	90	50
ZC-PA12-S40PHL-16X13	16	13	13	40	110	50
ZC-PA12-S40PHL-18X14	18	14	17	52	100	50
ZC-PA12-S40PHL-20X16	20	16	16	48	200	50
ZC-PA12-S40PHL-22X18	22	18	13	40	200	50

## INDUSTRIAL PNEUMATICS - hoses



### PA 12 E

**Hose material:** PA 12 polyamide (Nylon)

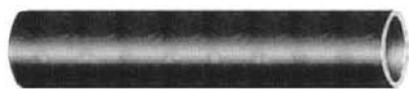
**Working temp.:** From -10°C up to +80°C

Lightweight, flexible hose with calibrated outside diameter designed for pneumatic, hydraulic, fuel and oil installations, lubrication and chemicals. Available in natural colour.

Standards: DIN 73378.

code	O.D. [mm]	I.D. [mm]	working pressure 20°C [bar]	bending radius [mm]	standard length [m]
SH-PA12-04X02	4	2	40	15	100
SH-PA12-04X03	4	3	18	30	100
SH-PA12-05X03	5	3	30	30	100
SH-PA12-06X04	6	4	25	38	100
SH-PA12-08X05	8	5	26	35	100
SH-PA12-08X06	8	6	18	57	100
SH-PA12-08X5.5	8	5.5	24	48	100
SH-PA12-10X06	10	6	28	35	100
SH-PA12-10X07	10	7	24	45	100
SH-PA12-10X08	10	8	14	76	100
SH-PA12-10X7.5	10	7.5	18	66	100
SH-PA12-12X08	12	8	27	80	100
SH-PA12-12X09	12	9	18	83	100
SH-PA12-12X10	12	10	11	70	100
SH-PA12-14X10	14	10	22	90	100
SH-PA12-14X11	14	11	14	83	100
SH-PA12-15X12	15	12	15	100	100
SH-PA12-16X13	16	13	14	90	100
SH-PA12-18X14	18	14	17	190	100
SH-PA12-20X16	20	16	15	180	100
SH-PA12-22X18	22	18	13	200	100

## INDUSTRIAL PNEUMATICS - hoses



### RILSAN HT

**Hose material:** Modified polyamide PPA  
**Working temp.:** From -40°C up to +150°C  
 (for water-based media +70°C)

Lightweight, flexible hose with calibrated outside diameter designed for pneumatic, hydraulic, fuel and oil installations, lubrication and chemicals. Particularly recommended for industrial and car installations of hot fluids (fuels, oils, refrigerants) or air without water content. Available in black colour only.  
 Standards: DIN 73378, ISO 7628.

code	O.D. [mm]	I.D. [mm]	working press. 23°C [bar]	bursting press. 23°C [bar]	bending radius [mm]	standard length [m]
ZC-RILSAN-HT-04X02	4	2	44	132	16	100
ZC-RILSAN-HT-05X03	5	3	33	100	20	100
ZC-RILSAN-HT-06X04	6	4	28	84	30	100
ZC-RILSAN-HT-08X06	8	6	20	60	40	100
ZC-RILSAN-HT-10X08	10	8	16	48	60	50
ZC-RILSAN-HT-12X09	12	9	20	60	60	50
ZC-RILSAN-HT-12X10	12	10	12	36	85	50
ZC-RILSAN-HT-14X10	14	10	23	68	75	50
ZC-RILSAN-HT-14X12	14	12	10	30	90	50
ZC-RILSAN-HT-15X12	15	12	16	48	90	50



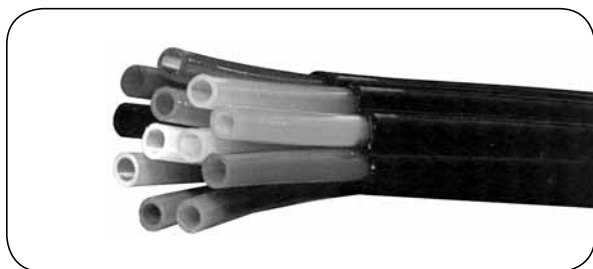
### HTR AB (AIR BRAKE)

**Hose material:** Thermoplastic elastomer (TPE)  
 polyester-based  
**Working temp.:** From -40°C up to +100°C  
 (for water-based media +70°C)

Lightweight, flexible hose with calibrated outside diameter designed for car air brake systems in particular. It is free of plasticizers and so does not get stiff prematurely. Resistant to UV radiation. Available in black colour only.  
 Standards: ISO 7628 : 2010 (category 1).

code	O.D. [mm]	I.D. [mm]	working press. 23°C [bar]	bursting press. 23°C [bar]	bending radius [mm]	standard length [m]
ZC-HTRAB-04X02	4	2	10	40	20	100
ZC-HTRAB-06X04	6	4	10	40	30	100
ZC-HTRAB-08X06	8	6	10	40	40	100
ZC-HTRAB-10X08	10	8	10	40	50	50
ZC-HTRAB-12X09	12	9	10	40	60	50
ZC-HTRAB-14X10	14	10	10	40	70	50
ZC-HTRAB-15X12	15	12	10	40	75	50
ZC-HTRAB-16X12	16	12	10	40	80	50

## INDUSTRIAL PNEUMATICS - hoses









### PA 12 MULTI

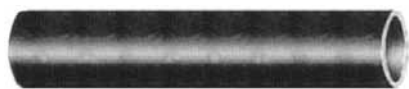
**Hose material:** PA 12 polyamide (Nylon)

**Working temp.:** From -20°C up to +80°C  
(for fluids containing water to +65°C)

Multihose with a black polyurethane outside cover widely used in pneumatic, hydraulic, fuel and oil installations, lubrication and chemicals. Different colours of hoses in the bundle enable easy recognition of each circuit or medium being transferred.

code	number of hoses	O.D. [mm]	I.D. [mm]	wall thickness [mm]	working pressure [bar]	bursting pressure [bar]	weight [g/m]
ZC-M422A	2 	4	2	1	33	132	40
ZC-M4252A		4	2.5	0.75	22	88	36
ZC-M4272A		4	2.7	0.65	17	68	35
ZC-M642A		6	4	1	20	80	60
ZC-M862A		8	6	1	14	56	78
ZC-M1082A		10	8	1	11	44	128
ZC-M12102A		12	10	1	9	36	187
ZC-M14122A		14	12	1	7.5	30	211
ZC-M15122A		15	12	1.5	11	44	267
ZC-M151252A		15	12.5	1.25	9	36	247
ZC-M423A	3 	4	2	1	33	132	57
ZC-M4253A		4	2.5	0.75	22	88	51
ZC-M4273A		4	2.7	0.65	17	68	48
ZC-M643A		6	4	1	20	80	76
ZC-M863A		8	6	1	14	56	118
ZC-M1083A		10	8	1	11	44	148
ZC-M12103A		12	10	1	9	36	215
ZC-M14123A		14	12	1	7.5	30	243
ZC-M15123A		15	12	1.5	11	44	303
ZC-M151253A		15	12.5	1.25	9	36	273
ZC-M424A	4 	4	2	1	33	132	70
ZC-M4254A		4	2.5	0.75	22	88	62
ZC-M4274A		4	2.7	0.65	17	68	60
ZC-M644A		6	4	1	20	80	107
ZC-M864A		8	6	1	14	56	140
ZC-M1084A		10	8	1	11	44	222
ZC-M12104A		12	10	1	9	36	317
ZC-M14124A		14	12	1	7.5	30	359
ZC-M15124A		15	12	1.5	11	44	467
ZC-M151254A		15	12.5	1.25	9	36	427
ZC-M425A	5 	4	2	1	33	132	90
ZC-M4255A		4	2.5	0.75	22	88	81
ZC-M4275A		4	2.7	0.65	17	68	73
ZC-M645A		6	4	1	20	80	132
ZC-M865A		8	6	1	14	56	175
ZC-M1085A		10	8	1	11	44	268
ZC-M12105A		12	10	1	9	36	364
ZC-M427A	7 	4	2	1	33	132	116
ZC-M4257A		4	2.5	0.75	22	88	102
ZC-M4277A		4	2.7	0.65	17	68	97
ZC-M647A		6	4	1	20	80	185
ZC-M867A		8	6	1	14	56	243
ZC-M1087A		10	8	1	11	44	308
ZC-M4212A	12 	4	2	1	33	132	199
ZC-M42512A		4	2.5	0.75	22	88	176
ZC-M42712A		4	2.7	0.65	17	68	167
ZC-M6412A		6	4	1	20	80	267
ZC-M8612A		8	6	1	14	56	426

## INDUSTRIAL PNEUMATICS - hoses



### PUR

**Hose material:** PUR polyurethane

**Working temp.:** From -40°C up to +85°C

Lightweight, flexible hose widely used in pneumatic and hydraulic applications, tool lines, industrial robots, etc. Resistant to abrasion, solvents, fuels, hydrocarbons. Remains flexible at low temperatures. Shore (A) hardness 90°. Available in natural, black and blue colour.

code	O.D. [mm]	I.D. [mm]	working pressure [bar]	bending radius [mm]	standard length [m]
PP-PUR-04X2,3	4	2.3	14.3	12	50
PP-PUR-04X2,5	4	2.5	12.7	12	50
PP-PUR-05X3,1	5	3.1	13.3	13	50
PP-PUR-06X4	6	4	11.3	15	50
PP-PUR-08X5,7	8	5.7	10.7	30	50
PP-PUR-10X7,5	10	7.5	8.7	45	50
PP-PUR-12X9	12	9	9	55	50
PP-PUR-14X11	14	11	9	60	50



### PUR E

**Hose material:** PUR polyurethane

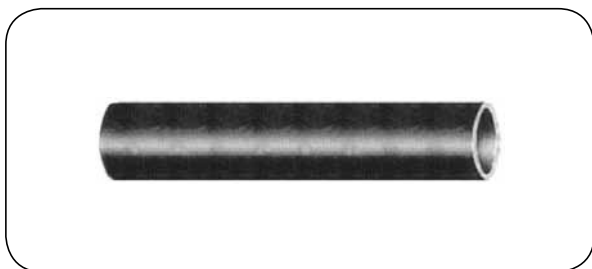
**Working temp.:** From -40°C up to +70°C

Lightweight, flexible hose widely used in pneumatic and hydraulic applications, tool lines, industrial robots, etc. Resistant to abrasion, solvents, fuels, hydrocarbons. Remains flexible at low temperatures. Shore (A) hardness is 95°. Available in natural and blue colour.

code	O.D. [mm]	I.D. [mm]	working pressure 20°C [bar]	bending radius [mm]	standard length [m]
SH-PURE-04X2,5	4	2.5	12	20	50
SH-PURE-06X4	6	4	11	25	50
SH-PURE-08X5,7	8	5.7	8	35	50
SH-PURE-10X7,5	10	7.5	8	40	50
SH-PURE-12X9	12	9	8	45	50



## INDUSTRIAL PNEUMATICS - hoses

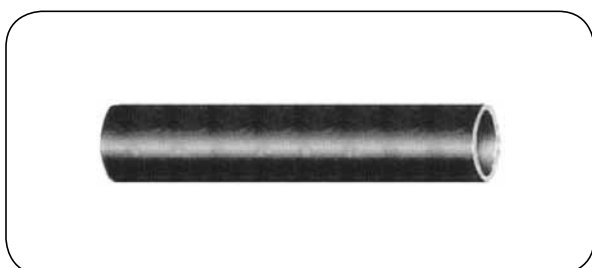


### PUR F

**Hose material:** Polyether-polyurethane  
**Working temp.:** From -40°C up to +85°C

Lightweight, highly flexible hose used in applications that are in frequent contact with water (very high resistance to microbes and hydrolysis), detergents and solvents. Remains flexible at low temperatures. High resistance to abrasion and kinking. Calibrated outside diameter allows to use push-in fittings. Shore (A) hardness 98°. Meets FDA standards. Available in transparent, semi-transparent black, blue, green and red colour versions.

code	O.D. [mm]	I.D. [mm]	working press. 20°C [bar]	working press. 60°C [bar]	bending radius [mm]	standard length [m]
PP-PUR-F-04X2.5	4	2.5	24	12	12	50
PP-PUR-F-06X3.9	6	3.9	22	10	15	50
PP-PUR-F-08X5.5	8	5.5	16	10	25	50
PP-PUR-F-10X7	10	7	16	10	40	50
PP-PUR-F-12X8	12	8	16	10	60	50



### PUR ASS

**Hose material:** Antistatic polyurethane  
**Working temp.:** From -30°C up to +80°C  
**Vacuum:** Up to 0.95 bar

Lightweight, very flexible hose intended for air, gases, water and other media. Widely used in installations specially prone to static charge build-up or in potentially explosive zones. Compliant with ATEX directive (94/9/EC). Electrical resistance  $R < 10^6 \Omega$ . Resistant to hydrolysis, microbes, abrasion and UV radiation. Calibrated outside diameter allows to use push-in fittings. Recommended for application in electronic industry, powder coating, potentially explosive atmospheres, mining, sorting machines and conveyors for industrial components. The working pressure is given at 2:1 safety factor against the maximum working pressure not causing hose damage.

code	O.D. [mm]	I.D. [mm]	working press. 20°C [bar]	working press. 60°C [bar]	bending radius [mm]	standard length [m]
PP-PUR-ASS-04X2,5	4	2.5	16	9	9	100
PP-PUR-ASS-05X3,1	5	3.1	15	10	12	100
PP-PUR-ASS-06X3,9	6	3.9	15	10	15	100
PP-PUR-ASS-08X5,7	8	5.7	11	7	28	100
PP-PUR-ASS-10X7,5	10	7.5	9	6	35	100
PP-PUR-ASS-12X9	12	9	9	5	50	50

\* Bending radius must be increased by 20% at vacuum.

## INDUSTRIAL PNEUMATICS - hoses



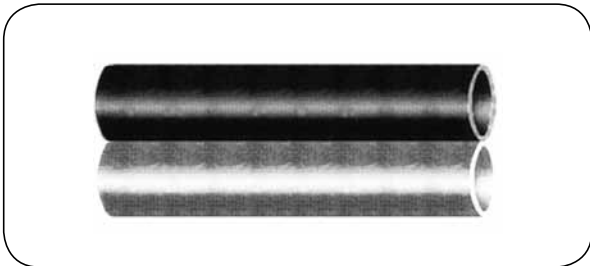
### FLAMEX

**Hose material:** Flame resistant PUR polyurethane

**Working temp.:** From -35°C up to +100°C

Lightweight, flexible hose designed for air, water and other media. Resistant to flame, weld spatter and hot metal turnings. Resistant to hydrolysis, biological corrosion, UV radiation, solvents and detergents. Withstands 0.9 bar vacuum. Calibrated outside diameter allows to use push-in fittings.

code	O.D. [mm]	I.D. [mm]	working pressure [bar]	bending radius [mm]	standard length [m]
PP-FLAMEX-04X02	4	2	20	7	50
PP-FLAMEX-08X04	8	4	20	15	50
PP-FLAMEX-10X06	10	6	20	20	50
PP-FLAMEX-12X08	12	8	20	28	50
PP-FLAMEX-14X10	14	10	20	45	50



### DUO PU

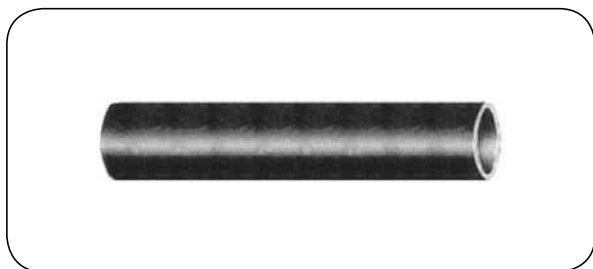
**Hose material:** PUR polyurethane (blue + black)

**Working temp.:** From -40°C up to +85°C

Lightweight, very flexible twin hose widely used in pneumatic and hydraulic applications, tool lines, industrial robots, etc. Resistant to abrasion, solvents, fuels, hydrocarbons. Remains flexible at low temperature. Shore (A) hardness 90°.

code	O.D. [mm]	I.D. [mm]	working pressure [bar]	bending radius [mm]	standard length [m]
NP-DUO-PU-04X02	4	2	23	20	50
NP-DUO-PU-06X04	6	4	14	30	50
NP-DUO-PU-08X06	8	6	10	35	50
NP-DUO-PU-10X07	10	7	12	40	50

## INDUSTRIAL PNEUMATICS - hoses



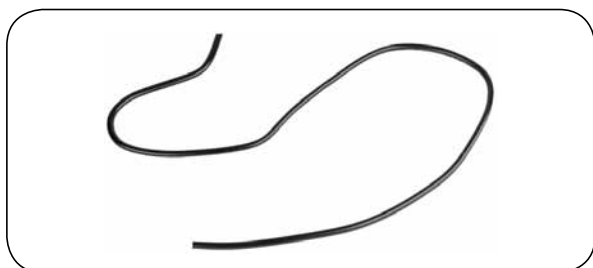
### PVDF

**Hose material:** Polyvinylidene fluoride PVDF

**Working temp.:** From -40°C up to +150°C

Hose with outstanding mechanical parameters. Excellent resistance to high temperature, high pressure, UV radiation and many chemicals. Sterile, non-flammable and with low gas permeability.

code	O.D. [mm]	I.D. [mm]	tolerance [mm]	working press. 23°C [bar]	bending radius [mm]	weight [g/m]
NP-PVDF-04X02	4	2	± 0.1	126	18	17
NP-PVDF-06X04	6	4	± 0.1	65	33	28
NP-PVDF-08X06	8	6	± 0.1	48	49	39
NP-PVDF-10X08	10	8	± 0.1	38	72	50
NP-PVDF-12X10	12	10	± 0.1	31	82	62



### 1300

**Internal layer:** Polyethylene

**Reinforcement:** Aluminium

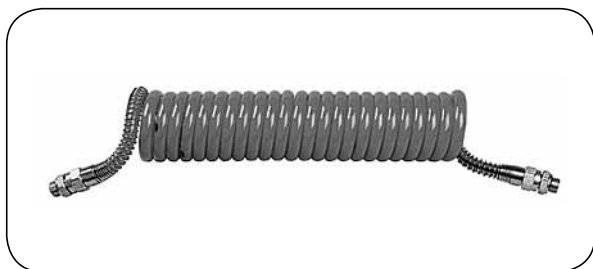
**External layer:** Black polyethylene

**Working temp.:** From -40°C up to +80°C

Composite hose designed for pneumatic control systems. Because of the excellent chemical resistance of hose external layer it can reliably operate in chemically aggressive environments. Reinforced with the layer of aluminium, the hose features extra strength to fit continuous long lengths without the use of mounting brackets or any additional support.. Moreover, the hose has so called shape memory so it can be mounted even in hardly accessible spaces. Suitable to work underground without any special protection. The unique construction of the hose makes it even 5 times lighter than standard pneumatic hoses.

code	O.D. [mm]	I.D. [mm]	working press. 23°C [bar]	working press. 65°C [bar]	working press. 80°C [bar]	bursting press. 23°C [bar]	bending radius [mm]	weight [g/m]
SY-1300-M060B	6	4	28.8	17.5	12	115	19	2.00
SY-1300-M080B	8	5.3	28.8	17.5	12	115	25	3.20
SY-1300-M100B	10	6.2	28.8	17.5	12	115	32	5.70
SY-1300-M120B	12	8.13	24.5	11	9.5	98	40	7.50
SY-1300-M140B	14	9.75	24.5	11	9.5	98	50	9.60
SY-1300-M150B	15	10.75	20	10	8.5	65	50	10.60

## INDUSTRIAL PNEUMATICS - hoses



### AC E

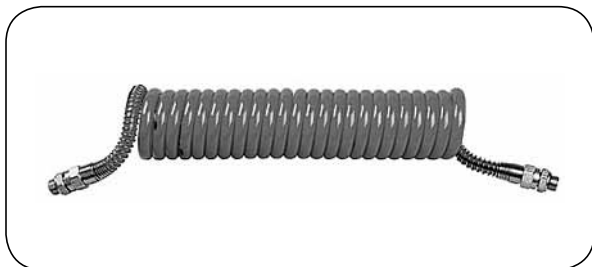
**Hose material:** Blue PA 11/12 polyamide (Nylon)

**Working temp.:** From -40°C up to +80°C

Spiral hose designed for pneumatic control systems, pneumatic tools, industrial robots, etc. Supplied as a hose assembly with 100 mm straight ends with fittings (BSPTmale thread).

code	O.D. [mm]	I.D. [mm]	working length [m]	outside coil diameter [mm]	coil block length [mm]	working press. 20°C [bar]	fitting male thread [inch]
SH-ACE-06-020	6	4	2	71	120	27	1/4
SH-ACE-06-050	6	4	5	71	312	27	1/4
SH-ACE-06-075	6	4	7.5	71	472	27	1/4
SH-ACE-06-100	6	4	10	71	633	27	1/4
SH-ACE-08-020	8	6	2	90.5	125	19	1/4
SH-ACE-08-050	8	6	5	90.5	327	19	1/4
SH-ACE-08-075	8	6	7.5	90.5	495	19	1/4
SH-ACE-08-100	8	6	10	90.5	664	19	1/4
SH-ACE-10-020	10	8	2	94	152	15	3/8
SH-ACE-10-050	10	8	5	94	400	15	3/8
SH-ACE-10-075	10	8	7.5	94	606	15	3/8
SH-ACE-10-100	10	8	10	94	812	15	3/8
SH-ACE-12-020	12	9	2	98	179	19	3/8
SH-ACE-12-050	12	9	5	98	470	19	3/8
SH-ACE-12-075	12	9	7.5	98	712	19	3/8
SH-ACE-12-100	12	9	10	98	954	19	3/8
SH-ACE-15-020	15	12	2	187	112	15	3/8
SH-ACE-15-050	15	12	5	187	294	15	3/8
SH-ACE-15-075	15	12	7.5	187	445	15	3/8
SH-ACE-15-100	15	12	10	187	597	15	3/8
SH-ACE-16-020	16	11	2	189	119	15	1/2
SH-ACE-16-050	16	11	5	189	312	15	1/2
SH-ACE-16-075	16	11	7.5	189	472	15	1/2
SH-ACE-16-100	16	11	10	189	633	15	1/2

## INDUSTRIAL PNEUMATICS - hoses



### SCAR

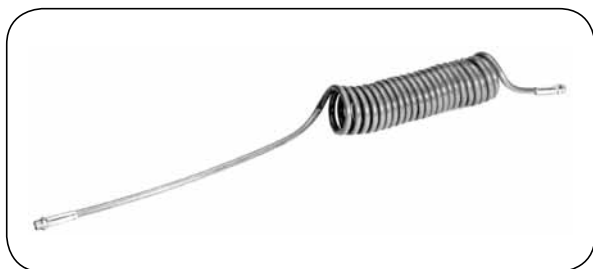
**Hose material:** Blue PA 11/12 polyamide (Nylon)

**Working temp.:** From -40°C up to +80°C

Spiral hose designed for pneumatic control systems, pneumatic tools, industrial robots, etc. Supplied as a hose assembly with 100 mm straight ends with fittings (BSPTmale thread).

code	O.D. [mm]	I.D. [mm]	working length [m]	outside coil diameter [mm]	coil block length [mm]	working press. 20°C [bar]	fitting male thread [inch]
ZC-SCAR-06-025	6	4	2.5	64	168	28	1/4
ZC-SCAR-06-050	6	4	5	64	330	28	1/4
ZC-SCAR-06-075	6	4	7.5	64	498	28	1/4
ZC-SCAR-06-100	6	4	10	64	660	28	1/4
ZC-SCAR-08-025	8	6	2.5	86	168	20	1/4
ZC-SCAR-08-050	8	6	5	86	328	20	1/4
ZC-SCAR-08-075	8	6	7.5	86	496	20	1/4
ZC-SCAR-08-100	8	6	10	86	656	20	1/4
ZC-SCAR-10-025	10	8	2.5	102	180	16	3/8
ZC-SCAR-10-050	10	8	5	102	350	16	3/8
ZC-SCAR-10-075	10	8	7.5	102	530	16	3/8
ZC-SCAR-10-100	10	8	10	102	700	16	3/8
ZC-SCAR-12-025	12	10	2.5	110	216	12	3/8
ZC-SCAR-12-050	12	10	5	110	420	12	3/8
ZC-SCAR-12-075	12	10	7.5	110	624	12	3/8
ZC-SCAR-12-100	12	10	10	110	828	12	3/8
ZC-SCAR-15-025	15	12	2.5	184	165	16	1/2
ZC-SCAR-15-050	15	12	5	184	300	16	1/2
ZC-SCAR-15-075	15	12	7.5	184	450	16	1/2
ZC-SCAR-15-100	15	12	10	184	685	16	1/2

## INDUSTRIAL PNEUMATICS - hoses



### SPP E

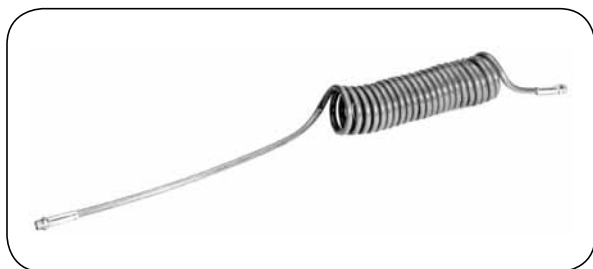
**Hose material:** Blue PUR polyurethane

**Working temp.:** From -40°C up to +75°C

Highly flexible spiral hose resistant to abrasion, breaking and kinking. Designed for pneumatic control systems, pneumatic tools, industrial robots, etc. Available as a hose assembly with 100 mm and 500 mm straight ends with fittings (BSPT male thread).

code	O.D. [mm]	I.D. [mm]	working length [m]	outside coil diameter [mm]	coil block length [mm]	working press. 20°C [bar]	fitting male thread [inch]
SH-SPPE-06-020	6	4	2	33	210	11	1/4
SH-SPPE-06-050	6	4	5	33	515	11	1/4
SH-SPPE-06-075	6	4	7.5	33	780	11	1/4
SH-SPPE-06-100	6	4	10	33	1050	11	1/4
SH-SPPE-08-020	8	5	2	50	180	13	1/4
SH-SPPE-08-050	8	5	5	50	445	13	1/4
SH-SPPE-08-075	8	5	7.5	50	680	13	1/4
SH-SPPE-08-100	8	5	10	50	910	13	1/4
SH-SPPE-08-150	8	5	15	74	765	13	1/4
SH-SPPE-10-020	10	6.5	2	70	160	11	1/4
SH-SPPE-10-050	10	6.5	5	70	400	11	1/4
SH-SPPE-10-075	10	6.5	7.5	70	610	11	1/4
SH-SPPE-10-100	10	6.5	10	70	815	11	1/4
SH-SPPE-10-150	10	6.5	15	93	765	11	1/4
SH-SPPE-12-020	12	8	2	82	160	10	3/8
SH-SPPE-12-050	12	8	5	82	400	10	3/8
SH-SPPE-12-075	12	8	7.5	82	610	10	3/8
SH-SPPE-12-100	12	8	10	82	815	10	3/8
SH-SPPE-12-150	12	8	15	82	1215	10	3/8
SH-SPPE-15-020	15	10	2	103	160	14	3/8
SH-SPPE-15-050	15	10	5	103	390	14	3/8
SH-SPPE-15-075	15	10	7.5	103	600	14	3/8
SH-SPPE-15-100	15	10	10	103	804	14	3/8
SH-SPPE-15-150	15	10	15	103	1194	14	3/8
SH-SPPE-16-020	16	11	2	105	167	10	1/2
SH-SPPE-16-050	16	11	5	105	415	10	1/2
SH-SPPE-16-075	16	11	7.5	105	632	10	1/2
SH-SPPE-16-100	16	11	10	105	850	10	1/2

## INDUSTRIAL PNEUMATICS - hoses

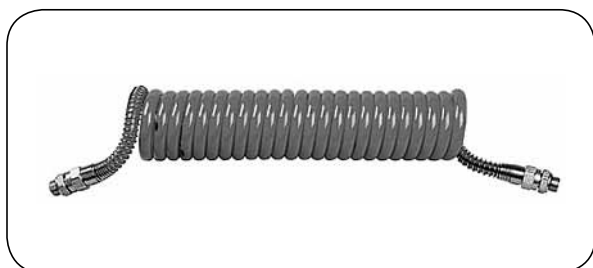


### SPCRB

**Hose material:** Blue PUR polyurethane  
**Working temp.:** From -40°C up to +60°C

Highly flexible spiral hose resistant to abrasion, breaking and kinking. Designed for pneumatic control systems, pneumatic tools, industrial robots, etc. Available as a hose assembly with 100 mm and 500 mm straight ends with fittings (BSPT male thread).

code	O.D. [mm]	I.D. [mm]	working length [m]	outside coil diameter [mm]	coil block length [mm]	working press. 20°C [bar]	fitting male thread [inch]
ZC-SPCRB-06-025	6	4	2.5	42	250	13	1/4
ZC-SPCRB-06-050	6	4	5	42	515	13	1/4
ZC-SPCRB-06-075	6	4	7.5	42	780	13	1/4
ZC-SPCRB-08-025	8	5	2.5	46	315	17	1/4
ZC-SPCRB-08-050	8	5	5	46	650	17	1/4
ZC-SPCRB-08-075	8	5	7.5	46	980	17	1/4
ZC-SPCRB-10-025	10	6.5	2.5	60	300	13	1/4
ZC-SPCRB-10-050	10	6.5	5	60	620	13	1/4
ZC-SPCRB-10-075	10	6.5	7.5	60	940	13	1/4
ZC-SPCRB-12-025	12	8	2.5	84	250	9	3/8
ZC-SPCRB-12-050	12	8	5	84	515	9	3/8
ZC-SPCRB-12-075	12	8	7.5	84	780	9	3/8
ZC-SPCRB-16-025	16	10	2.5	92	315	16	3/8
ZC-SPCRB-16-050	16	10	5	92	655	16	3/8
ZC-SPCRB-16-075	16	10	7.5	92	990	16	3/8



### BLX

**Hose material:** Yellow polyurethane PUR S  
**Working temp.:** From -40°C up to +70°C  
**Hardness:** 98° Shore (A)

Spiral hose intended for air brake systems, connects the air lines from the tractor to the trailer. Highly flexible at low temperatures, resistant to bending, abrasion, weather conditions including UV radiation and ozone. Straight 150 mm sections at both ends are secured with steel protective coil spring. The hose comes with M16x1.5 male thread fittings as a standard (optionally with BSP or BSPT - contact Sales Department).

Available either red or black and as a twin yellow-red hose.

Standards: ISO 7375/2 1998, ISO 7628/2 1998, DIN 73378/02 96, DIN 74310-2/12 93, DIN 74323/04 91, DIN 74324/02 96.

code	O.D. [mm]	I.D. [mm]	working length [m]	outside coil diameter [mm]	coil block length [mm]	working press. 20°C [bar]	fitting male thread [inch]
MB-BLX-12-040Y	12	8	4	75	290	10	M16x1.5

## INDUSTRIAL PNEUMATICS - hoses



### UBCS

**Hose material:** Blue PUR polyurethane

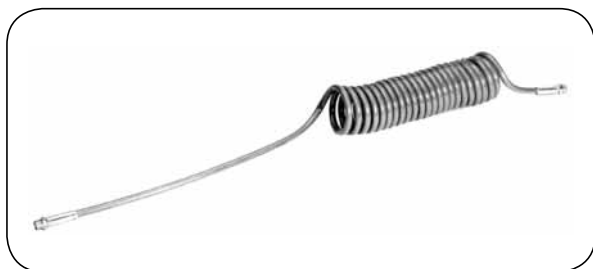
**Working temp.:** From -40°C up to +70°C

Highly flexible, spiral, reinforced hose resistant to abrasion, tearing and kinking. Designed for application in car workshops in particular, for pneumatic control systems, hand tools, industrial robots, etc. The hose has straight segments of 100 mm and 500 mm at the ends with BSPT male thread fittings. Shore (A) hardness 98°.

code	O.D. [mm]	I.D. [mm]	working length [m]	outside coil diameter [mm]	coil block length [mm]	working press. 20°C [bar]	fitting male thread [inch]
SH-UBCS-08-020	8	5	2	42	187	15	1/4
SH-UBCS-08-050	8	5	5	42	585	15	1/4
SH-UBCS-08-075	8	5	7.5	42	904	15	1/4
SH-UBCS-08-100	8	5	10	52	952	15	1/4
SH-UBCS-10-020	10	6.5	2	69	137	15	1/4
SH-UBCS-10-050	10	6.5	5	69	429	15	1/4
SH-UBCS-10-075	10	6.5	7.5	69	663	15	1/4
SH-UBCS-10-100	10	6.5	10	69	896	15	1/4
SH-UBCS-12-020	12	8	2	82	140	15	3/8
SH-UBCS-12-050	12	8	5	82	436	15	3/8
SH-UBCS-12-075	12	8	7.5	82	674	15	3/8
SH-UBCS-12-100	12	8	10	97	752	15	3/8
SH-UBCS-15-020	15	10	2	102	140	15	3/8
SH-UBCS-15-050	15	10	5	102	436	15	3/8
SH-UBCS-15-075	15	10	7.5	102	674	15	3/8
SH-UBCS-15-100	15	10	10	102	911	15	3/8
SH-UBCS-16-020	16	11	2	104	147	15	1/2
SH-UBCS-16-050	16	11	5	104	461	15	1/2
SH-UBCS-16-075	16	11	7.5	104	712	15	1/2
SH-UBCS-16-100	16	11	10	104	962	15	1/2



## INDUSTRIAL PNEUMATICS - hoses



### UWSB

**Hose material:** Flame retardant PUR polyurethane

**Working temp.:** From -40°C up to +70°C



Highly flexible hose resistant to abrasion, hot welding spatter and sparks. Designed for pneumatic control systems, hand tools, industrial robots, etc. Resistant to UV radiation and ageing. The hose has straight segments of 100 mm and 500 mm at the ends with BSPT male thread fittings. Shore (A) hardness 98°.

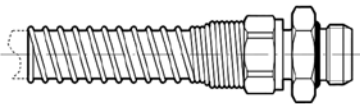
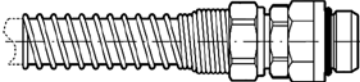
Standards: UL 94 VO (external layer).

code	O.D. [mm]	I.D. [mm]	working length [m]	outside coil diameter [mm]	coil block length [mm]	working press. 20°C [bar]	fitting male thread [inch]
SH-UWSB-06-020BK	6	4	2	49	156	11	1/4
SH-UWSB-06-050BK	6	4	5	49	488	11	1/4
SH-UWSB-06-075BK	6	4	7.5	49	754	11	1/4
SH-UWSB-06-100BK	6	4	10	49	1019	11	1/4
SH-UWSB-08-020BK	8	5	2	56	175	13	1/4
SH-UWSB-08-050BK	8	5	5	56	548	13	1/4
SH-UWSB-08-075BK	8	5	7.5	56	846	13	1/4
SH-UWSB-08-100BK	8	5	10	69	896	13	1/4
SH-UWSB-10-020BK	10	6.5	2	72	160	11	1/4
SH-UWSB-10-050BK	10	6.5	5	72	500	11	1/4
SH-UWSB-10-075BK	10	6.5	7.5	72	772	11	1/4
SH-UWSB-10-100BK	10	6.5	10	82	911	11	1/4
SH-UWSB-12-020BK	12	8	2	85	159	10	3/8
SH-UWSB-12-050BK	12	8	5	85	497	10	3/8
SH-UWSB-12-075BK	12	8	7.5	85	767	10	3/8
SH-UWSB-12-100BK	12	8	10	100	859	10	3/8

# INDUSTRIAL PNEUMATICS - hoses

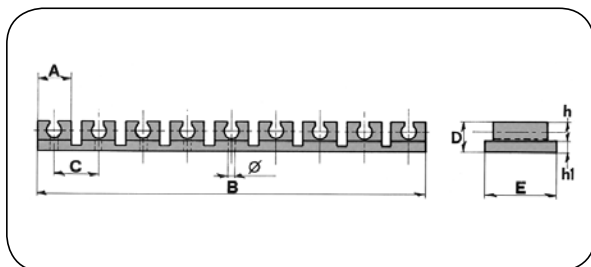
## Hose accessories

picture	code	pipe or hose O.D. [mm]	description
	SH-TC15	3 ÷ 15	Cutting tool.
	SH-TC15EK	-	Spare blade.
	ZC-PZP12	3 ÷ 12	Cutting tool.
	ZC-PZP12EK	-	Spare blade.
	ZC-PZG28	3 ÷ 28	Cutting tool.
	ZC-PZG28EK	-	Spare blade.
	JG-TS28	4 ÷ 28	Cutting tool.
	JG-TS28EK	-	Spare blade.

picture	code	hose O.D. / I.D. [mm]	thread size [inch]	description
	MW-0010001	8/6	1/4	Male thread coupling with strain relief spring.
	MW-0010002	8/6	3/8	
	MW-0010003	10/8	1/4	
	MW-0010004	10/8	3/8	
	MW-0010005	12/10	3/8	
	MW-2501010	6/4	1/4	Swivel male thread coupling with strain relief spring.
	MW-2501011	8/6	1/4	
	MW-2501012	10/8	3/8	
	MW-2501013	12/10	3/8	

# INDUSTRIAL PNEUMATICS - hoses

## Hose accessories



### SFT

Working temp.: From 0°C up to +40°C

Holder for pneumatic hoses. Facilitates building of a pneumatic system, saves space and increases resistance to vibrations.

code	hose O.D. [mm]	number of hoses	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	h [mm]	h1 [mm]	Ø [mm]
ZC-SFT-04	4	10	9	114	11.7	8	19.5	5	3	2.5
ZC-SFT-06	6	10	9	114	11.7	10	19.5	7	3	2.5
ZC-SFT-08	8	10	12	143	14.6	12	19.5	9	3	3.1
ZC-SFT-10	10	10	15	172	17.4	13.8	19.5	10.8	3	4.1
ZC-SFT-12	12	4	19	78	20.5	16.8	19.5	14	3	4.1
ZC-SFT-14	14	4	21	87	22.5	18.8	19.5	16	3	4.1

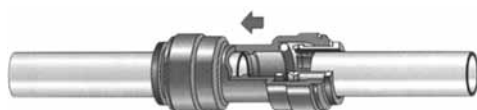
# INDUSTRIAL PNEUMATICS - SPEEDFIT system



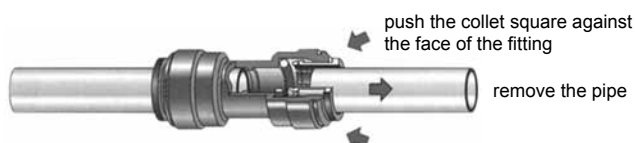
SPEEDFIT is a push-in system that enables very fast assembly of compressed air pipe systems. The system can be assembled using plastic or metal pipes (copper, brass, aluminium) in an outside diameter range from 12 mm to 28 mm (+0.05 / -0.1 mm). Flexible hoses made of polyamide, polyethylene or polyurethane can be used as well. Working temperature from -20°C up to +70°C. Working pressure 10 bar (+23°C), 7 bar (+70°C). System includes polyamide and aluminium pipes, hoses, straight fittings, adapters, elbows, tees, etc. Widely used for assembly of compressed air systems.

## Pipes with outside diameter 12 ÷ 22 mm

connection

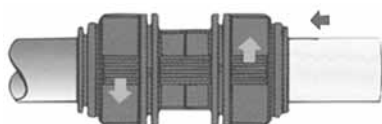


disconnection

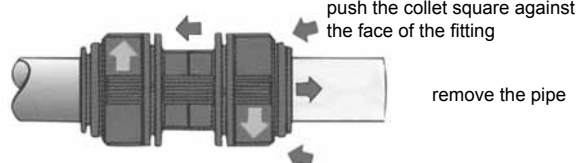



## Pipes with outside diameter 28 mm


connection




disconnection



	code	pipe O.D. [mm]	thread size [inch]	description  Straight connector with male thread (push-in end/male thread). Material: plastic. Working pressure: 10 bar. Thread seal by ring gasket.
	JG-PM011213E	12	3/8	
	JG-PM011214E	12	1/2	
	JG-PM011514E	15	1/2	
	JG-PM011516E	15	3/4	
	JG-PM011814E	18	1/2	
	JG-PM012216E	22	3/4	

	code	pipe O.D. [mm]	description  90° elbow. Material: plastic. Working pressure: 10 bar.
	JG-PM0312E	12	
	JG-PM0315E	15	
	JG-PM0318E	18	
	JG-PM0322E	22	
	JG-PM0328E	28	

	code	pipe O.D. [mm]	description  Straight connector. Material: plastic. Working pressure: 10 bar.
	JG-PM0412E	12	
	JG-PM0415E	15	
	JG-PM0418E	18	
	JG-PM0422E	22	
	JG-PM0428E	28	

# INDUSTRIAL PNEUMATICS - SPEEDFIT system

	code	pipe O.D. [mm]		description
	JG-PM0212E	12		Tee. Material: plastic. Working pressure: 10 bar.
	JG-PM0215E	15		
	JG-PM0218E	18		
	JG-PM0222E	22		
	JG-PM0228E	28		

	code	pipe O.D. [mm]	thread size [inch]	description
	JG-PM051213E	12	3/8	Stem connector with male thread. Material: plastic. Working pressure: 10 bar. Thread seal by ring gasket.
	JG-PM051214E	12	1/2	
	JG-PM051513E	15	3/8	
	JG-PM051514E	15	1/2	
	JG-PM051814E	18	1/2	
	JG-PM052214E	22	1/2	
	JG-PM052216E	22	3/4	

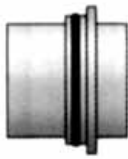
	code	pipe O.D. [mm]	stem O.D. [mm]	description
	JG-PM221212E	12	12	Push-in 90° elbow. Material: plastic. Working pressure: 10 bar.
	JG-PM221515E	15	15	
	JG-PM221818E	18	18	
	JG-PM222222E	22	22	

	code	stem O.D. [mm]	pipe O.D. [mm]	description
	JG-PM061512E	15	12	Reducing connector. Material: plastic. Working pressure: 10 bar.
	JG-PM061815E	18	15	
	JG-PM062215E	22	15	
	JG-PM062218E	22	18	
	JG-PM062815E	28	15	
	JG-PM062822E	28	22	


	code	pipe O.D. [mm]	pipe O.D. [mm]	description
	JG-PM3018AE	18	15	Reducing tee. Material: plastic. Working pressure: 10 bar.
	JG-PM3022AE	22	15	

	code	pipe O.D. [mm]	description
	JG-PMTT22E	22	Water trap tee. Material: plastic. Working pressure: 10 bar.


## INDUSTRIAL PNEUMATICS - SPEEDFIT system

	code	pipe O.D. [mm]	description	
	JG-WTC28	28	Water trap tee for 28 mm tee Material: brass.	


  

	code	pipe O.D. [mm]	thread size [inch]	description
	JG-PM15WB	15	1/2	Wingback elbow. Material: brass.
	JG-PM22WB	22	3/4	


  

	code	pipe O.D. [mm]	thread size [inch]	description
	JG-MM011504N	15	1/2	Straight connector with BSPT thread. * - BSP thread Material: brass.
	JG-MM012206N	22	3/4	
	JG-MM012808N	28	1	
	JG-MM012818N	28	1*	


  

	code	pipe O.D. [mm]	thread size [inch]	description
	JG-MM051504N	15	1/2	Stem connector with BSPT thread. * - BSP thread Material: brass.
	JG-MM052206N	22	3/4	
	JG-MM052816N	28	3/4*	
	JG-MM052818N	28	1*	

	code	pipe O.D. [mm]	thread size [inch]	description
	JG-MM501514N	15	1/2	Stem connector with female thread. Material: brass.
	JG-MM502216N	22	3/4	

	code	pipe O.D. [mm]	description	
	JG-15RA	15	Disconnection tool.	
	JG-22RA	22		

## INDUSTRIAL PNEUMATICS - SPEEDFIT system

	code	pipe O.D. [mm]		description
	JG-PM0812R	12		Blank plug.
	JG-PM0815E	15		
	JG-PM0818E	18		
	JG-PM0822E	22		
	JG-PM0828E	28		

	code	thread size [inch]		description
	JG-LWSK-08	5x1/2		Plastic porting block (three 1/2" blank plugs).


	code	inlet thread [inch]	outlet thread [inch]	description
	JG-WALLBOX-08	1/2	3x1/2	Aluminium porting block (two 1/2" blank plugs).
	JG-WALLBOX-12	3/4	3x1/2	


	code	pipe O.D. [mm]		description
	JG-PM4615E	15		Pipe blind cap.
	JG-PM4622E	22		


	code	pipe O.D. [mm]		description
	JG-PM1912E	12		Collet cover preventing acci- dental disconnection.
	JG-PM1915E	15		
	JG-PM1918E	18		
	JG-PM1922E	22		


	code	pipe O.D. [mm]		description
	JG-PM1812R	12		Collet safety locking ring pre- venting accidental disconnec- tion.
	JG-CM1815S	15		
	JG-CM1818S	18		
	JG-CM1822S	22		


# INDUSTRIAL PNEUMATICS - SPEEDFIT system


	code	pipe O.D. [mm]	description
	JG-RK12	12	Pipe clip.
	JG-RK15	15	
	JG-RK18	18	
	JG-RK22	22	
	JG-RK28	28	

	code	pipe or hose O.D. [mm]	description
	JG-TS28	4 ÷ 28	Pipe and hose cutter.
	JG-TS28EK	-	Spare blade.

	code	pipe or hose O.D. [mm]	description
	JG-AL30	4 ÷ 30	Aluminium pipe cutter.

	code	pipe O.D. [mm]	pipe I.D. [mm]	description
	JG-PA-RM1209-3M-B	12	9	Rigid Nylon pipe. Colour: blue. Length: 3 m.
	JG-PA-RM1512-3M-B	15	12	
	JG-PA-RM1814-3M-B	18	14	
	JG-PA-RM2218-3M-B	22	18	
	JG-PA-RM2823-3M-B	28	23	

	code	pipe O.D. [mm]	pipe I.D. [mm]	description
	JG-PA-RM1209-3M-E	12	9	Rigid Nylon pipe. Colour: black. Length: 3 m.
	JG-PA-RM1512-3M-E	15	12	
	JG-PA-RM1814-3M-E	18	14	
	JG-PA-RM2218-3M-E	22	18	
	JG-PA-RM2823-3M-E	28	23	

	code	pipe O.D. [mm]	pipe I.D. [mm]	description
	JG-AL-M1512-3M-10B	15	12	Aluminium pipe. Colour: blue. Length: 3 m.
	JG-AL-M1816-3M-10B	18	16	
	JG-AL-M2220-3M-10B	22	20	
	JG-AL-M2826-3M-10B	28	26	



# INDUSTRIAL PNEUMATICS - fittings

## Push-in fittings - R series

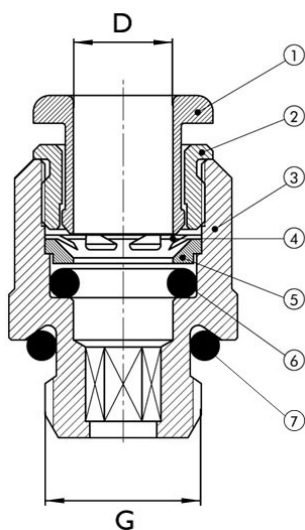


**Material:** Nickel-plated brass, technopolymer  
**Seal:** 16 bar (brass), 12 bar (technopolymer)  
**Working press.:** NBR  
**Vacuum:** Vacuum  
**Working temp.:** From -20°C up to +80°C (brass),  
 From -20°C up to +60°C (technopolymer)

Push-in fittings are designed to connect pneumatic hoses with calibrated outside diameter. The connection is achieved by pushing the hose into the fitting. To disconnect, the body has to be pressed towards release bushing. It is recommended to use these fittings with hoses made of polyamide. The hoses made of polyurethane or other materials can also be used.

R series push-in fittings and Fox series miniature fittings, manufactured by Metal Work, are the best solution for connecting pipes and actuators in pneumatic systems. Available in various configurations for virtually unlimited application. Quick and easy to use, the push-in fittings can be re-used thousands of times without affecting the pneumatic and mechanical seal in any way. The clamping spring of special shape grips the pipe without scratching or deforming it and facilitates release.

### Construction:



D (hose O.D.):  
 3, 3.17, 4, 5, 6, 8, 10, 12, 14 mm

- 1 Ring or release bushing: technopolymer
- 2 Locking bushing: brass or technopolymer
- 3 Body: brass or technopolymer
- 4 Clamping spring: stainless steel (for pipes Ø 3 and Ø 3.17 and R31 and R32: brass gripper)
- 5 Spring supporting ring: technopolymer
- 6 Seal: NBR
- 7 O-ring: NBR

G (the size of a connection thread):  
 M3, M5, M7, M12x1.5, 1/8", 1/4", 3/8", 1/2"

### O-ring (pos. 7):

thread	O-ring
M3	2.6x1
M5 (3 and 3.17)	3x1.2
M5	3.5x1.2
M7	5x1.5
M12x1.5	9.75x1.78
1/8"	7.66x1.78
1/4"	10.82x1.78
3/8"	14x1.78
1/2"	17.13x2.62



### FOX mini series

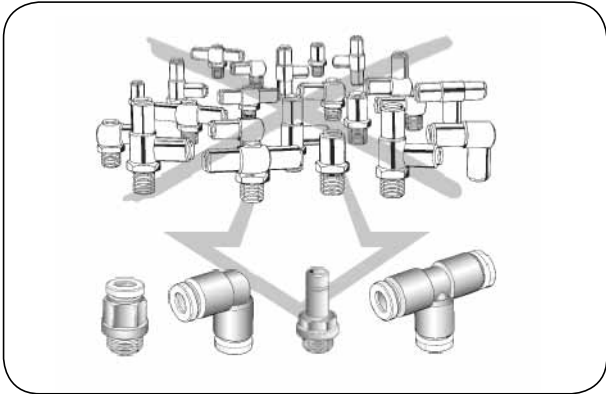
RL (FOX) miniature series (with reduced outside dimensions, for hoses with outside diameter ranging from 3 to 10 mm) is intended to allow the use of push-in fittings where the room for assembly is limited (e.g. small distribution valves). In the RL Ø 4 and Ø 8 fittings the release bushing has patented screwdriver slots to facilitate disconnection in tight construction.

A mounting grip of RL21 and RL22 fittings (elbow and tee) has a ring for fixing to the wall asymmetrically in order to contain the head of a screw within the overall dimensions of the fitting.

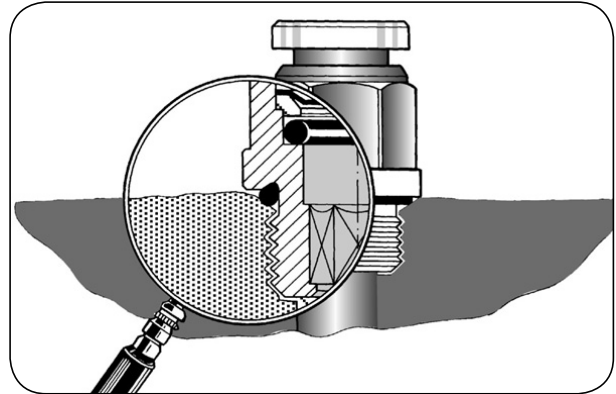
RL fittings Ø8 are not compatible with R7, R8 and R9 fittings of an older R series.

## INDUSTRIAL PNEUMATICS - fittings

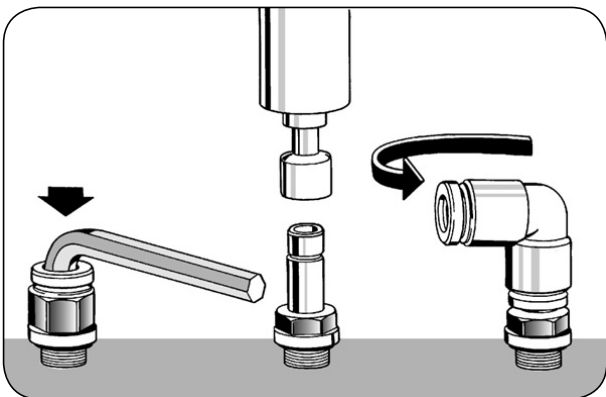
### Push-in fittings - R series



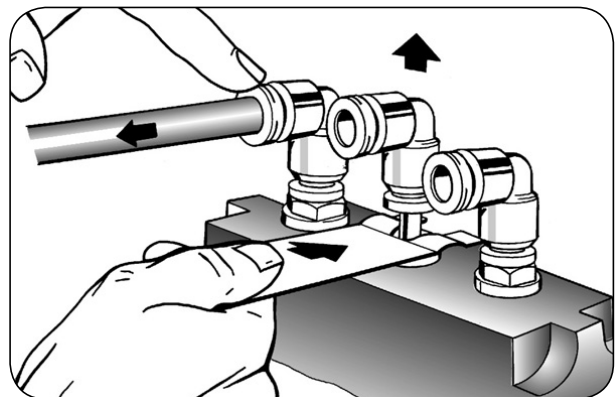
Despite a wide range of available types of push-in fittings, a complete system can be created using just four different types (R1, R4, R6, R5). Therefore storage costs are significantly reduced.



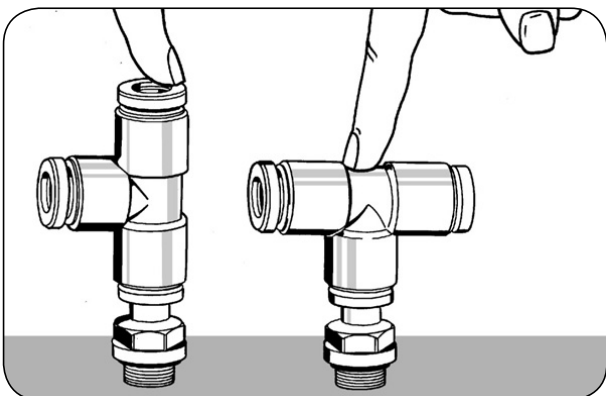
All fittings with a male parallel thread are equipped with an O-ring (Metal Work patented solution). The use of an O-ring considerably improves the seal of angled, rough, and slightly convex surfaces. PTFE tape does not have to be used at all.



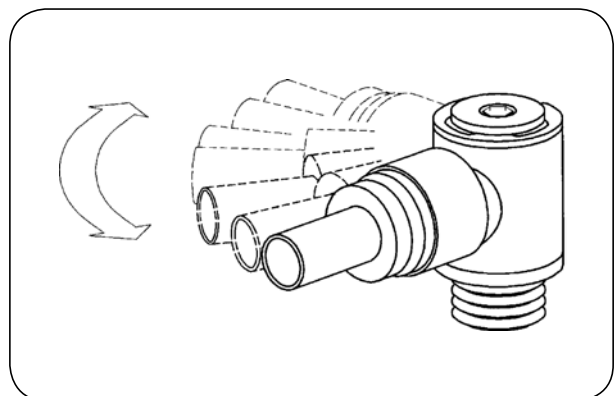
Fittings can be assembled with an Allen wrench or pneumatic tools. All elbows and tees are rotary so assembly time is significantly reduced.



The pipe is easy to disassemble (by gentle pressing both a release bushing and fitting - by radial push of spanner).



A single tee can give a central or lateral tee.

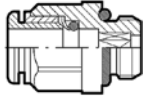


A special version (e.g. R15, R16) with two O-rings allows maximum orientation so that the fitting can follow hose movement.

# INDUSTRIAL PNEUMATICS - fittings

## Push-in fittings - R series

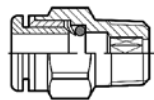
Push-in connector with male thread, brass



**R 1**

code	hose O.D. [mm]	thread size
MW-2001B01	3	M3
MW-2001B02	3	M5
MW-2001A01	3.17	M3
MW-2001A02	3.17	M5
MW-2L01001	4	M5
MW-2L01020	4	M7
MW-2L01002	4	1/8"
MW-2L01003	4	1/4"
MW-2001004	5	M5
MW-2001005	5	1/8"
MW-2001006	5	1/4"
MW-2L01000	6	M5
MW-2L01021	6	M7
MW-2L01101	6	M12x1.5
MW-2L01007	6	1/8"
MW-2L01008	6	1/4"
MW-2L01009	8	1/8"
MW-2L01010	8	1/4"
MW-2L01011	8	3/8"
MW-2L01102	8	M12x1.5
MW-2L01012	10	1/4"
MW-2L01013	10	3/8"
MW-2L01018	10	1/2"
MW-2001019	12	1/4"
MW-2001014	12	3/8"
MW-2001015	12	1/2"
MW-2001016	14	3/8"
MW-2001017	14	1/2"

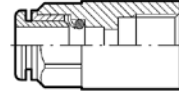
Push-in connector with male conical thread, brass



**R 1C**

code	hose O.D. [mm]	thread size
MW-2L01C02	4	1/8"
MW-2L01C07	6	1/8"
MW-2L01C08	6	1/4"
MW-2001Z07	6	12x1
MW-2001Z08	6	12x1.25
MW-2L01C09	8	1/8"
MW-2L01C10	8	1/4"
MW-2L01C11	8	3/8"
MW-2L01C13	10	1/4"
MW-2L01C14	10	3/8"
MW-2001C15	12	3/8"
MW-2001C16	12	1/2"

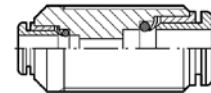
Push-in connector with female thread, brass



**R 2**

code	hose O.D. [mm]	thread size
MW-2002B02	3	M5
MW-2002A02	3.17	M5
MW-2L02001	4	1/8"
MW-2L02002	4	1/4"
MW-2002003	5	1/8"
MW-2002004	5	1/4"
MW-2L02005	6	1/8"
MW-2L02006	6	1/4"
MW-2L02007	8	1/8"
MW-2L02008	8	1/4"
MW-2L02009	10	1/4"
MW-2L02010	10	3/8"
MW-2L02011	12	3/8"
MW-2L02012	12	1/2"

Straight adapter, brass



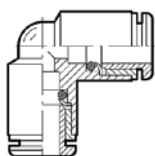
**R 3**

code	hose O.D. [mm]
MW-2003A02	3
MW-2003A01	3.17
MW-2L03001	4
MW-2003002	5
MW-2L03003	6
MW-2L03004	8
MW-2L03005	10
MW-2003006	12
MW-2003007	14
MW-2L03301	4
MW-2L03302	4
MW-2L03303	6
MW-2L03304	6
MW-2L03306	6
MW-2L03305	8
MW-2L03307	8
MW-2L03308	10

# INDUSTRIAL PNEUMATICS - fittings

## Push-in fittings - R series

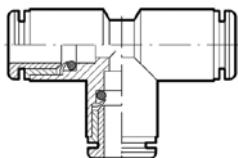
90° elbow adapter, brass



**R 4**

code	hose O.D. [mm]
MW-2004A02	3
MW-2004A01	3.17
MW-2L04001	4
MW-2004002	5
MW-2L04003	6
MW-2L04004	8
MW-2L04005	10
MW-2004006	12
MW-2004007	14

Tee adapter, brass



**R 5**

code	hose O.D. [mm]
MW-2005A02	3
MW-2005A01	3.17
MW-2L05001	4
MW-2005002	5
MW-2L05003	6
MW-2L05004	8
MW-2L05005	10
MW-2005006	12
MW-2005007	14

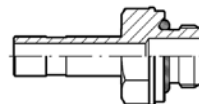
Straight stem fitting, brass



**R 7**

code	hose O.D. [mm]
MW-2007001	4
MW-2007002	5
MW-2007003	6
MW-2L07004	8
MW-2007005	10
MW-2007006	12
MW-2007007	14

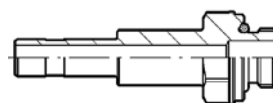
Straight stem fitting, brass



**R 6**

code	hose O.D. [mm]	thread size
MW-2006A02	3	M5
MW-2006A01	3.17	M5
MW-2006001	4	M5
MW-2006020	4	M7
MW-2006002	4	1/8"
MW-2006003	4	1/4"
MW-2006004	5	M5
MW-2006005	5	1/8"
MW-2006006	5	1/4"
MW-2006000	6	M5
MW-2006021	6	M7
MW-2006007	6	1/8"
MW-2006008	6	1/4"
MW-2006009	8	1/8"
MW-2006010	8	1/4"
MW-2006011	8	3/8"
MW-2006012	10	1/4"
MW-2006013	10	3/8"
MW-2006022	10	1/2"
MW-2006019	12	1/4"
MW-2006014	12	3/8"
MW-2006015	12	1/2"
MW-2006016	14	3/8"
MW-2006017	14	1/2"
MW-2006101	6	M12x1.5
MW-2006102	8	M12x1.5

Straight stem fitting, brass

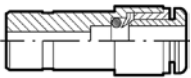


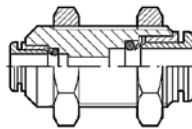
**R 18**

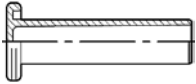
code	hose O.D. [mm]	thread size
MW-2018002	4	1/8"
MW-2018007	6	1/8"
MW-2018008	6	1/4"
MW-2018009	8	1/8"
MW-2018010	8	1/4"
MW-2018011	8	3/8"
MW-2018012	10	1/4"
MW-2018013	10	3/8"

# INDUSTRIAL PNEUMATICS - fittings

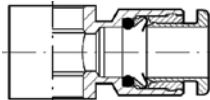
## Push-in fittings - R series

Reducing fitting, brass		
		
<b>R 8</b>		
code	stem O.D. [mm]	hose O.D. [mm]
MW-2008A01	4	3
MW-2008A02	4	3.17
MW-2008001	5	4
MW-2L08002	6	4
MW-2008003	6	5
MW-2L08004	8	4
MW-2008005	8	5
MW-2L08006	8	6
MW-2L08007	10	6
MW-2L08008	10	8
MW-2008015	12	10
MW-2008009	12	4
MW-2008010	12	6
MW-2008011	12	8
MW-2008014	14	8
MW-2008017	14	10
MW-2008018	14	12
MW-2009001	4	6

Bulkhead straight adapter, brass			
			<b>R 10</b>
code	hose O.D. [mm]		
MW-2011A02	3		M8x0.75
MW-2011A01	3.17		M8x0.75
MW-2L11001	4		M11x1
MW-2011002	5		M14x1
MW-2L11003	6		M13x1
MW-2L11004	8		M15x1
MW-2L11005	10		M17x1
MW-2011006	12		M22x1
MW-2011007	14		M24x1
MW-2L11301	4	6	M13x1
MW-2L11302	4	8	M15x1
MW-2L11303	6	8	M15x1
MW-2L11304	6	10	M17x1
MW-2L11306	6	12	M20x1
MW-2L11305	8	10	M17x1
MW-2L11307	8	12	M20x1
MW-2L11308	10	12	M20x1

Blank plug, technopolymer, (brass)	
	
<b>R 9</b>	
code	hose O.D. [mm]
MW-2010A02*	3
MW-2L10A01	3.17
MW-2L10001	4
MW-2010002*	5
MW-2L10003	6
MW-2L10004	8
MW-2L10005	10
MW-2L10006	12
MW-2010007*	14

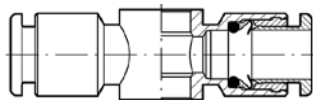
\* - made of technopolymer

BANJO elbow body, brass		
		
<b>R 13</b>		
code	hose O.D. [mm]	thread size
MW-2012A02	3	M5
MW-2012A01	3.17	M5
MW-2012001	4	M5
MW-2012002	4	1/8"
MW-2012003	5	M5
MW-2012004	5	1/8"
MW-2012005	6	1/8"
MW-2012006	6	1/4"
MW-2012007	8	1/8"
MW-2012008	8	1/4"
MW-2012009	8	3/8"
MW-2012010	10	1/4"
MW-2012011	10	3/8"
MW-2012012	12	3/8"
MW-2012013	12	1/4"
MW-2012014	12	1/2"

# INDUSTRIAL PNEUMATICS - fittings

## Push-in fittings - R series

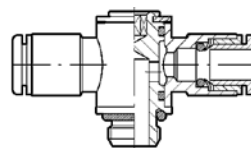
BANJO tee body, brass



**R 14**

code	hose O.D. [mm]	thread size
MW-2013001	4	M5
MW-2013002	4	1/8"
MW-2013003	5	M5
MW-2013004	5	1/8"
MW-2013005	6	1/8"
MW-2013006	6	1/4"
MW-2013007	8	1/8"
MW-2013008	8	1/4"
MW-2013009	8	3/8"
MW-2013010	10	1/4"
MW-2013011	10	3/8"

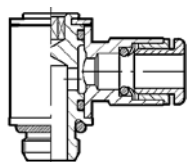
Rotary tee, male thread, brass



**R 16**

code	hose O.D. [mm]	thread size
MW-2L15001	4	M5
MW-2L15020	4	M7
MW-2L15002	4	1/8"
MW-2015003	5	M5
MW-2015004	5	1/8"
MW-2L15106	6	M5
MW-2L15021	6	M7
MW-2L15005	6	1/8"
MW-2L15007	6	1/4"
MW-2L15006	8	1/8"
MW-2L15008	8	1/4"
MW-2L15013	8	3/8"
MW-2L15009	10	1/4"
MW-2L15014	10	3/8"
MW-2015010	12	1/4"
MW-2015011	12	3/8"
MW-2015012	12	1/2"

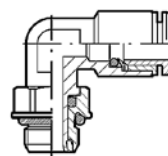
Rotary 90° elbow, male thread, brass



**R 15**

code	hose O.D. [mm]	thread size
MW-2014101	3	M3
MW-2014102	3.17	M3
MW-2014103	3	M5
MW-2014104	3.17	M5
MW-2L14001	4	M5
MW-2L14020	4	M7
MW-2L14002	4	1/8"
MW-2014003	5	M5
MW-2014004	5	1/8"
MW-2L14106	6	M5
MW-2L14021	6	M7
MW-2L14005	6	1/8"
MW-2L14007	6	1/4"
MW-2L14006	8	1/8"
MW-2L14008	8	1/4"
MW-2L14013	8	3/8"
MW-2L14009	10	1/4"
MW-2L14014	10	3/8"
MW-2014010	12	1/4"
MW-2014011	12	3/8"
MW-2014012	12	1/2"

Rotary 90° elbow, male parallel thread, brass

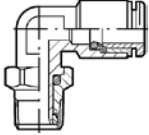


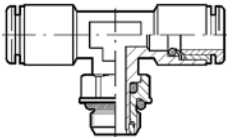
**R 31**

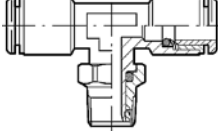
code	hose O.D. [mm]	thread size
MW-2L31001	4	M5
MW-2L31002	4	1/8"
MW-2L31003	4	1/4"
MW-2031004	5	M5
MW-2031005	5	1/8"
MW-2031006	5	1/4"
MW-2L31007	6	M5
MW-2L31008	6	1/8"
MW-2L31009	6	1/4"
MW-2L31010	8	1/8"
MW-2L31011	8	1/4"
MW-2L31012	8	3/8"
MW-2L31013	10	1/4"
MW-2L31014	10	3/8"
MW-2031015	10	1/2"
MW-2031016	12	1/4"
MW-2031017	12	3/8"
MW-2031018	12	1/2"
MW-2031019	14	1/2"

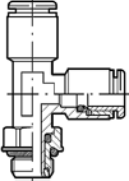
# INDUSTRIAL PNEUMATICS - fittings

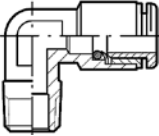
## Push-in fittings - R series

Rotary 90° elbow, male conical thread, brass		
		
<b>R 31C</b>		
code	hose O.D. [mm]	thread size
MW-2L31C02	4	1/8"
MW-2L31C03	4	1/4"
MW-2L31C08	6	1/8"
MW-2L31C09	6	1/4"
MW-2L31C10	8	1/8"
MW-2L31C11	8	1/4"
MW-2L31C12	8	3/8"
MW-2L31C13	10	1/4"
MW-2L31C14	10	3/8"
MW-2031C15	12	3/8"
MW-2031C16	12	1/2"

Rotary tee, male parallel thread, brass		
		
<b>R 32</b>		
code	hose O.D. [mm]	thread size
MW-2L32001	4	M5
MW-2L32002	4	1/8"
MW-2L32003	4	1/4"
MW-2032005	5	1/8"
MW-2L32004	6	M5
MW-2L32008	6	1/8"
MW-2L32009	6	1/4"
MW-2L32010	8	1/8"
MW-2L32011	8	1/4"
MW-2L32012	8	3/8"
MW-2L32013	10	1/4"
MW-2L32014	10	3/8"
MW-2032017	12	3/8"
MW-2032018	12	1/2"
MW-2032019	14	1/2"

Rotary tee, male conical thread, technopolymer		
		
<b>R 32C</b>		
code	hose O.D. [mm]	thread size
MW-2L32C02	4	1/8"
MW-2L32C03	4	1/4"
MW-2L32C08	6	1/8"
MW-2L32C09	6	1/4"
MW-2L32C10	8	1/8"
MW-2L32C11	8	1/4"
MW-2L32C12	8	3/8"
MW-2L32C13	10	1/4"
MW-2L32C14	10	3/8"

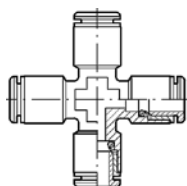
Lateral rotary tee, male thread, brass		
		
<b>R 38</b>		
code	hose O.D. [mm]	thread size
MW-2L38002	4	1/8"
MW-2038005	5	1/8"
MW-2L38008	6	1/8"
MW-2L38009	6	1/4"
MW-2L38010	8	1/8"
MW-2L38011	8	1/4"
MW-2L38013	10	1/4"
MW-2L38014	10	3/8"
MW-2038015	12	3/8"
MW-2038016	12	1/2"

Rotary 90° elbow, male conical thread, brass		
		
<b>R 39C</b>		
code	hose O.D. [mm]	thread size
MW-2L39C02	4	1/8"
MW-2L39C08	6	1/8"
MW-2L39C09	6	1/4"
MW-2039Z07	6	M12x1
MW-2039Z08	6	M12x1.25
MW-2L39C10	8	1/8"
MW-2L39C11	8	1/4"
MW-2L39C13	10	1/4"

# INDUSTRIAL PNEUMATICS - fittings

## Push-in fittings - R series

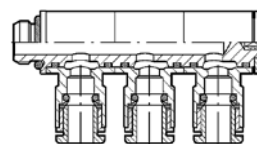
Cross adapter, brass



**R 40**

code	hose O.D. [mm]
MW-2L40001	4
MW-2L40003	6
MW-2L40004	8

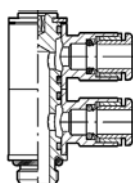
Triple rotary union, brass



**R 52**

code	hose O.D. [mm]	thread size
MW-2L52002	4	1/8"
MW-2L52008	6	1/8"
MW-2L52009	6	1/4"
MW-2L52010	8	1/8"
MW-2L52011	8	1/4"
MW-2L52013	10	1/4"

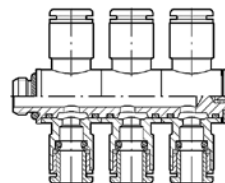
Dual rotary union, brass



**R 50**

code	hose O.D. [mm]	thread size
MW-2L50001	4	M5
MW-2L50002	4	1/8"
MW-2L50007	6	M5
MW-2L50008	6	1/8"
MW-2L50009	6	1/4"
MW-2L50010	8	1/8"
MW-2L50011	8	1/4"
MW-2L50013	10	1/4"

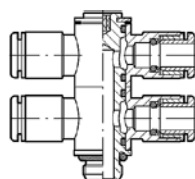
Triple rotary union, brass



**R 53**

code	hose O.D. [mm]	thread size
MW-2L53002	4	1/8"
MW-2L53008	6	1/8"
MW-2L53009	6	1/4"
MW-2L53010	8	1/8"
MW-2L53011	8	1/4"
MW-2L53013	10	1/4"

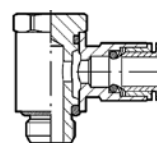
Dual rotary union, brass



**R 51**

code	hose O.D. [mm]	thread size
MW-2L51001	4	M5
MW-2L51002	4	1/8"
MW-2L51007	6	M5
MW-2L51008	6	1/8"
MW-2L51009	6	1/4"
MW-2L51010	8	1/8"
MW-2L51011	8	1/4"
MW-2L51013	10	1/4"

BANJO fitting, brass



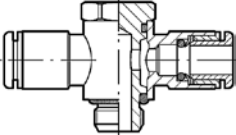
**R 54**

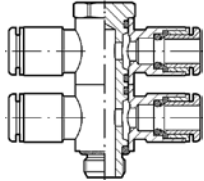
code	hose O.D. [mm]	thread size
MW-2L54001	4	M5
MW-2L54002	4	1/8"
MW-2L54007	6	M5
MW-2L54008	6	1/8"
MW-2L54009	6	1/4"
MW-2L54010	8	1/8"
MW-2L54011	8	1/4"
MW-2L54012	8	3/8"
MW-2L54013	10	1/4"
MW-2L54014	10	3/8"
MW-2L54018	12	1/4"
MW-2L54016	12	3/8"
MW-2L54017	12	1/2"

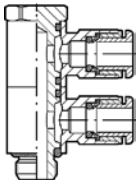


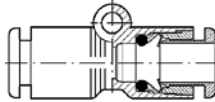
# INDUSTRIAL PNEUMATICS - fittings

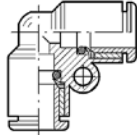
## Push-in fittings - R series

BANJO fitting, brass		
		
<b>R 55</b>		
code	hose O.D. [mm]	thread size
MW-2L55001	4	M5
MW-2L55002	4	1/8"
MW-2L55007	6	M5
MW-2L55008	6	1/8"
MW-2L55009	6	1/4"
MW-2L55010	8	1/8"
MW-2L55011	8	1/4"
MW-2L55012	8	3/8"
MW-2L55013	10	1/4"
MW-2L55014	10	3/8"
MW-2L55018	12	1/4"
MW-2L55016	12	3/8"
MW-2L55017	12	1/2"

BANJO fitting, brass		
		
<b>R 57</b>		
code	hose O.D. [mm]	thread size
MW-2L57001	4	M5
MW-2L57002	4	1/8"
MW-2L57007	6	M5
MW-2L57008	6	1/8"
MW-2L57009	6	1/4"
MW-2L57010	8	1/8"
MW-2L57011	8	1/4"
MW-2L57012	8	3/8"
MW-2L57013	10	1/4"
MW-2L57014	10	3/8"
MW-2L57016	12	3/8"
MW-2L57017	12	1/2"

BANJO fitting, brass		
		
<b>R 56</b>		
code	hose O.D. [mm]	thread size
MW-2L56001	4	M5
MW-2L56002	4	1/8"
MW-2L56007	6	M5
MW-2L56008	6	1/8"
MW-2L56009	6	1/4"
MW-2L56010	8	1/8"
MW-2L56011	8	1/4"
MW-2L56012	8	3/8"
MW-2L56013	10	1/4"
MW-2L56014	10	3/8"
MW-2L56016	12	3/8"
MW-2L56017	12	1/2"

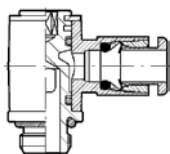
Straight adapter, technopolymer	
	
<b>R 19</b>	
code	hose O.D. [mm]
MW-2019001	4
MW-2019002	5
MW-2019003	6
MW-2019004	8
MW-2019005	10
MW-2019006	12

90° elbow adapter, technopolymer	
	
<b>R 21</b>	
code	hose O.D. [mm]
MW-2L21001	4
MW-2021002	5
MW-2L21003	6
MW-2L21004	8
MW-2021005	10
MW-2021006	12

# INDUSTRIAL PNEUMATICS - fittings

## Push-in fittings - R series

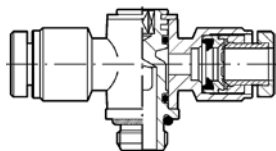
Rotary 90° elbow, male thread, technopolymer



**R 20**

code	hose O.D. [mm]	thread size
MW-2020001	4	M5
MW-2020002	4	1/8"
MW-2020003	5	M5
MW-2020004	5	1/8"
MW-2020016	6	M5
MW-2020005	6	1/8"
MW-2020007	6	1/4"
MW-2020006	8	1/8"
MW-2020008	8	1/4"
MW-2020009	10	1/4"
MW-2L20017	10	3/8"
MW-2020010	12	1/4"
MW-2020011	12	3/8"
MW-2020012	12	1/2"

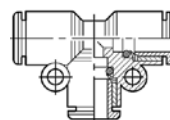
Rotary tee, male thread technopolymer



**R 20/A**

code	hose O.D. [mm]	thread size
MW-2020A01	4	M5
MW-2020A02	4	1/8"
MW-2020A03	5	M5
MW-2020A04	5	1/8"
MW-2020A05	6	1/8"
MW-2020A07	6	1/4"
MW-2020A06	8	1/8"
MW-2020A08	8	1/4"
MW-2020A09	10	1/4"
MW-2020A10	12	1/4"
MW-2020A11	12	3/8"
MW-2020A12	12	1/2"

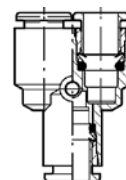
Tee adapter, technopolymer



**R 22**

code	hose O.D. [mm]
MW-2L22001	4
MW-2022002	5
MW-2L22003	6
MW-2L22004	8
MW-2022005	10
MW-2022006	12

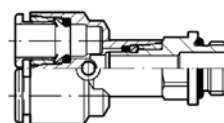
Y adapter, technopolymer



**R 23**

code	hose O.D. [mm]	
MW-2023001	4	
MW-2023002	5	
MW-2023003	6	
MW-2023004	8	
MW-2L23005	10	
MW-2L23006	12	
MW-2L23301	6	4
MW-2L23303	8	6
MW-2L23306	10	8
MW-2L23309	12	10

Rotary tee, male thread technopolymer

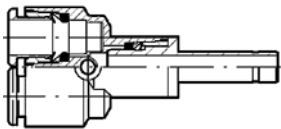


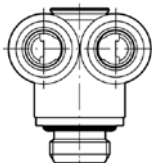
**R 23/M**

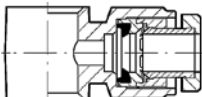
code	hose O.D. [mm]	thread size
MW-2L23401	4	M5
MW-2L23402	4	1/8"
MW-2L23403	4	1/4"
MW-2L23406	6	1/8"
MW-2L23407	6	1/4"
MW-2L23409	8	1/8"
MW-2L23410	8	1/4"
MW-2L23412	8	3/8"
MW-2L23413	10	1/4"
MW-2L23415	10	3/8"
MW-2L23419	12	3/8"
MW-2L23420	12	1/2"

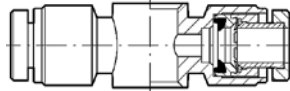
# INDUSTRIAL PNEUMATICS - fittings

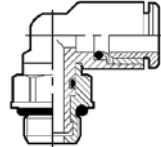
## Push-in fittings - R series

Y fitting, with stem fitting, technopolymer		
		
<b>R 24</b>		
code	stem O.D. [mm]	hose O.D. [mm]
MW-2024001	4	4
MW-2024003	6	6
MW-2L24004	8	8
MW-2L24005	10	10
MW-2L24006	12	12
MW-2L24301	6	4
MW-2L24303	8	6
MW-2L24306	10	8
MW-2L24309	12	10

Parallel Y fitting with male thread, technopolymer		
		
<b>R 25</b>		
code	hose O.D. [mm]	thread size
MW-2L25001	4	M5
MW-2L25002	4	M7
MW-2L25003	4	1/8"
MW-2L25004	6	1/8"
MW-2L25005	6	1/4"
MW-2L25008	8	1/4"
MW-2L25009	8	3/8"

BANJO straight body fitting, technopolymer		
		
<b>R 28</b>		
code	hose O.D. [mm]	thread size
MW-2012102	4	1/8"
MW-2012104	5	1/8"
MW-2012106	6	1/8"
MW-2012107	6	1/4"
MW-2012108	8	1/8"
MW-2012109	8	1/4"
MW-2012110	8	3/8"
MW-2012111	10	1/4"
MW-2012112	10	3/8"
MW-2012113	12	1/4"
MW-2012114	12	3/8"
MW-2012115	12	1/2"

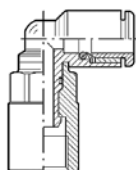
BANJO tee body, technopolymer		
		
<b>R 29</b>		
code	hose O.D. [mm]	thread size
MW-2013102	4	1/8"
MW-2013104	5	1/8"
MW-2013106	6	1/8"
MW-2013107	6	1/4"
MW-2013108	8	1/8"
MW-2013109	8	1/4"
MW-2013110	8	3/8"
MW-2013111	10	1/4"
MW-2013112	10	3/8"
MW-2013113	12	1/4"
MW-2013114	12	3/8"
MW-2013115	12	1/2"

Rotary 90° elbow, male thread, technopolymer		
		
<b>R 34</b>		
code	hose O.D. [mm]	thread size
MW-2L34001	4	M5
MW-2L34020	4	M7
MW-2L34002	4	1/8"
MW-2L34003	4	1/4"
MW-2L34006	6	M5
MW-2L34021	6	M7
MW-2L34007	6	1/8"
MW-2L34008	6	1/4"
MW-2L34009	8	1/8"
MW-2L34010	8	1/4"
MW-2L34011	8	3/8"
MW-2L34013	10	1/4"
MW-2L34014	10	3/8"
MW-2L34016	12	3/8"
MW-2L34017	12	1/2"

# INDUSTRIAL PNEUMATICS - fittings

## Push-in fittings - R series

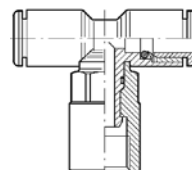
Rotary 90° elbow, female thread, technopolymer



**R 34/F**

code	hose O.D. [mm]	thread size
MW-2L34F01	4	M5
MW-2L34F05	4	1/8"
MW-2L34F06	6	M5
MW-2L34F07	6	1/8"
MW-2L34F08	6	1/4"
MW-2L34F09	8	1/8"
MW-2L34F10	8	1/4"
MW-2L34F13	10	1/4"
MW-2L34F14	10	3/8"
MW-2L34F16	12	3/8"
MW-2L34F17	12	1/2"

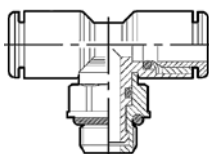
Rotary tee, female thread, technopolymer



**R 35/F**

code	hose O.D. [mm]	thread size
MW-2L35F01	4	M5
MW-2L35F06	6	M5
MW-2L35F07	6	1/8"
MW-2L35F08	6	1/4"
MW-2L35F09	8	1/8"
MW-2L35F10	8	1/4"
MW-2L35F13	10	1/4"
MW-2L35F14	10	3/8"
MW-2L35F16	12	3/8"
MW-2L35F17	12	1/2"

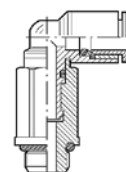
Rotary tee, male thread, technopolymer



**R 35**

code	hose O.D. [mm]	thread size
MW-2L35001	4	M5
MW-2L35020	4	M7
MW-2L35002	4	1/8"
MW-2L35003	4	1/4"
MW-2L35006	6	M5
MW-2L35007	6	1/8"
MW-2L35008	6	1/4"
MW-2L35009	8	1/8"
MW-2L35010	8	1/4"
MW-2L35011	8	3/8"
MW-2L35013	10	1/4"
MW-2L35014	10	3/8"
MW-2L35016	12	3/8"
MW-2L35017	12	1/2"

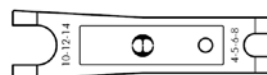
Extended rotary 90° elbow, male thread, technopolymer



**R 36**

code	hose O.D. [mm]	thread size
MW-2L36001	4	M5
MW-2L36020	4	M7
MW-2L36002	4	1/8"
MW-2L36006	6	M5
MW-2L36021	6	M7
MW-2L36007	6	1/8"
MW-2L36008	6	1/4"
MW-2L36009	8	1/8"
MW-2L36010	8	1/4"
MW-2L36012	10	1/4"

Disassembly tool



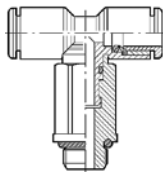
**R 17**

code	hose O.D. [mm]	application
MW-2L17001	3 ÷ 10	for R and FOX fittings
MW-2017001	4 ÷ 14	only R fittings

# INDUSTRIAL PNEUMATICS - fittings

## Push-in fittings - R series

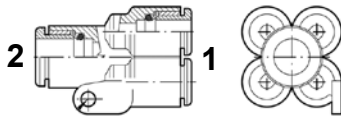
Extended rotary tee, male thread, technopolymer



**R 37**

code	hose O.D. [mm]	thread size
MW-2L37001	4	M5
MW-2L37020	4	M7
MW-2L37002	4	1/8"
MW-2L37006	6	M5
MW-2L37007	6	1/8"
MW-2L37008	6	1/4"
MW-2L37009	8	1/8"
MW-2L37010	8	1/4"
MW-2L37012	10	1/4"

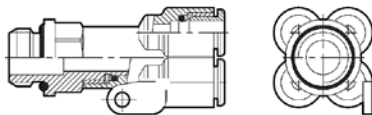
Divider, technopolymer



**R 42**

code	hose O.D. 1 [mm]	hose O.D. 2 [mm]
MW-2L42001	4	4
MW-2L42002	4	6
MW-2L42004	6	6
MW-2L42005	6	8

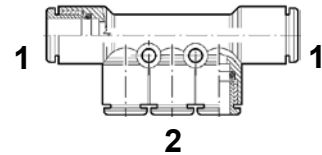
Divider, male thread, technopolymer



**R 43**

code	hose O.D. [mm]	thread size
MW-2L43001	4	M5
MW-2L43002	4	1/8"
MW-2L43003	4	1/4"
MW-2L43008	6	1/8"
MW-2L43009	6	1/4"

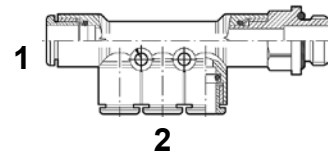
Divider, technopolymer



**R 44**

code	hose O.D. 1 [mm]	hose O.D. 2 [mm]
MW-2L44001	6	4
MW-2L44003	8	6

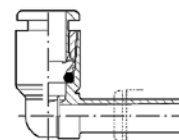
Divider, male thread, technopolymer



**R 45**

code	hose O.D. 1 [mm]	hose O.D. 2 [mm]	thread size
MW-2L45001	6	4	1/8"
MW-2L45002	6	4	1/4"
MW-2L45007	8	6	1/8"
MW-2L45008	8	6	1/4"
MW-2L45009	8	6	3/8"

90° elbow with stem, technopolymer

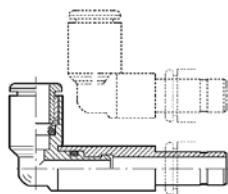


**R 46**

code	stem O.D [mm]	hose O.D. [mm]
MW-2L46001	4	4
MW-2L46002	6	6
MW-2L46003	8	8
MW-2L46004	10	10

## Push-in fittings - R series

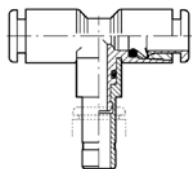
Extended 90° elbow with stem, technopolymer



**R 47**

code	stem O.D. [mm]	hose O.D. [mm]
MW-2L47001	4	4
MW-2L47002	6	6
MW-2L47003	8	8

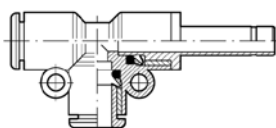
90° elbow with stem, technopolymer



**R 48**

code	stem O.D. [mm]	hose O.D. [mm]
MW-2L48001	4	4
MW-2L48002	6	6
MW-2L48003	8	8
MW-2L48004	10	10

Y fitting, with stem, technopolymer



**R 49**

code	stem O.D. [mm]	hose O.D. [mm]
MW-2L49001	4	4
MW-2L49003	6	6
MW-2L49004	8	8
MW-2L49005	10	10
MW-2L49006	12	12

# INDUSTRIAL PNEUMATICS - fittings

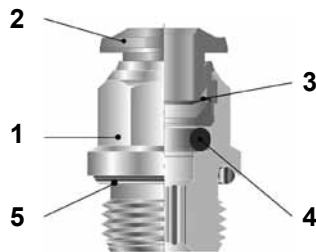
## Push-in fittings - S series




**Material:** Nickel-plated brass  
Technopolymer  
**Working press:** 10 bar  
**Vacuum:** -0.99 bar  
**Working temp.:** From 0°C up to +60°C  
**Seal:** NBR


A push-in fitting of S series is an economical solution applied to connect hoses with metric and imperial calibrated external diameter. The hose is just pushed into the fitting. In order to disconnect, the locking sleeve must be pressed.

### Construction:



1. Body: nickel-plated brass  
2. Release bushing: nickel-plated brass  
3. Locking bushing: technopolymer  
4. Hose seal: stainless steel  
5. Thread seal: NBR

Straight connection, BSP male thread		
 <b>PCM</b>		
code	hose O.D. [mm]	thread size [BSP]
SH-PCM-04-02B	4	1/8"
SH-PCM-04-04B	4	1/4"
SH-PCM-06-02B	6	1/8"
SH-PCM-06-04B	6	1/4"
SH-PCM-06-06B	6	3/8"
SH-PCM-06-08B	6	1/2"
SH-PCM-08-02B	8	1/8"
SH-PCM-08-04B	8	1/4"
SH-PCM-08-06B	8	3/8"
SH-PCM-08-08B	8	1/2"
SH-PCM-10-02B	10	1/8"
SH-PCM-10-04B	10	1/4"
SH-PCM-10-06B	10	3/8"
SH-PCM-10-08B	10	1/2"
SH-PCM-12-02B	12	1/8"
SH-PCM-12-04B	12	1/4"
SH-PCM-12-06B	12	3/8"
SH-PCM-12-08B	12	1/2"
SH-PCM-14-04B	14	1/4"
SH-PCM-14-06B	14	3/8"
SH-PCM-14-08B	14	1/2"
SH-PCM-16-06B	16	3/8"
SH-PCM-16-08B	16	1/2"

Straight connection, NPT male thread		
 <b>PCC</b>		
code	hose O.D. [inch]	thread size [NPT]
SH-PCC-02,5-02N	5/32	1/8"
SH-PCC-02,5-04N	5/32	1/4"
SH-PCC-02,5-06N	5/32	3/8"
SH-PCC-03-02N	3/16	1/8"
SH-PCC-03-04N	3/16	1/4"
SH-PCC-03-06N	3/16	3/8"
SH-PCC-04-02N	1/4	1/8"
SH-PCC-04-04N	1/4	1/4"
SH-PCC-04-06N	1/4	3/8"
SH-PCC-04-08N	1/4	1/2"
SH-PCC-05-02N	5/16	1/8"
SH-PCC-05-04N	5/16	1/4"
SH-PCC-05-06N	5/16	3/8"
SH-PCC-05-08N	5/16	1/2"
SH-PCC-06-02N	3/8	1/8"
SH-PCC-06-04N	3/8	1/4"
SH-PCC-06-06N	3/8	3/8"
SH-PCC-06-08N	3/8	1/2"
SH-PCC-08-02N	1/2	1/8"
SH-PCC-08-04N	1/2	1/4"
SH-PCC-08-06N	1/2	3/8"
SH-PCC-08-08N	1/2	1/2"

# INDUSTRIAL PNEUMATICS - fittings

## Push-in fittings - S series

90° elbow connection, BSP male thread



**PLM**

code	hose O.D. [mm]	thread size [BSP]
SH-PLM-04-02B	4	1/8"
SH-PLM-04-04B	4	1/4"
SH-PLM-04-06B	4	3/8"
SH-PLM-06-02B	6	1/8"
SH-PLM-06-04B	6	1/4"
SH-PLM-06-06B	6	3/8"
SH-PLM-06-08B	6	1/2"
SH-PLM-08-02B	8	1/8"
SH-PLM-08-04B	8	1/4"
SH-PLM-08-06B	8	3/8"
SH-PLM-08-08B	8	1/2"
SH-PLM-10-02B	10	1/8"
SH-PLM-10-04B	10	1/4"
SH-PLM-10-06B	10	3/8"
SH-PLM-10-08B	10	1/2"
SH-PLM-12-02B	12	1/8"
SH-PLM-12-04B	12	1/4"
SH-PLM-12-06B	12	3/8"
SH-PLM-12-08B	12	1/2"
SH-PLM-14-04B	14	1/4"
SH-PLM-14-06B	14	3/8"
SH-PLM-14-08B	14	1/2"
SH-PLM-16-06B	16	3/8"
SH-PLM-16-08B	16	1/2"

90° elbow connection, NPT male thread



**PLC**

code	hose O.D. [inch]	thread size [NPT]
SH-PLC-02,5-02N	5/32	1/8"
SH-PLC-02,5-04N	5/32	1/4"
SH-PLC-03-02N	3/16	1/8"
SH-PLC-03-04N	3/16	1/4"
SH-PLC-03-06N	3/16	3/8"
SH-PLC-04-02N	1/4	1/8"
SH-PLC-04-04N	1/4	1/4"
SH-PLC-04-06N	1/4	3/8"
SH-PLC-05-02N	5/16	1/8"
SH-PLC-05-04N	5/16	1/4"
SH-PLC-05-06N	5/16	3/8"
SH-PLC-05-08N	5/16	1/2"
SH-PLC-06-02N	3/8	1/8"
SH-PLC-06-04N	3/8	1/4"
SH-PLC-06-06N	3/8	3/8"
SH-PLC-06-08N	3/8	1/2"
SH-PLC-08-04N	1/2	1/4"
SH-PLC-08-06N	1/2	3/8"
SH-PLC-08-08N	1/2	1/2"

Straight connector



**PUCM**

code	hose O.D. [mm]	length [mm]
SH-PUCM-04	4	33
SH-PUCM-06	6	34.5
SH-PUCM-08	8	38.5
SH-PUCM-10	10	48.5
SH-PUCM-12	12	49
SH-PUCM-14	14	51.5
SH-PUCM-16	16	63.5

Straight connector



**PUCC**

code	hose O.D. [inch]	length [mm]
SH-PUCC-02,5	5/32	32
SH-PUCC-03	3/16	32
SH-PUCC-04	1/4	34.5
SH-PUCC-05	5/16	38.5
SH-PUCC-06	3/8	47.5
SH-PUCC-08	1/2	49



# INDUSTRIAL PNEUMATICS - fittings

## Push-in fittings - S series

Reducing straight connector



**PUCM**

code	hose O.D. [mm]		length [mm]
SH-PUCM-06-04	6	4	34
SH-PUCM-08-04	8	4	36.5
SH-PUCM-08-06	8	6	36.5
SH-PUCM-10-06	10	6	43
SH-PUCM-10-08	10	8	43
SH-PUCM-12-08	12	8	47
SH-PUCM-12-10	12	10	49
SH-PUCM-14-12	14	12	51
SH-PUCM-16-12	16	12	64
SH-PUCM-16-14	16	14	65

Reducing plug



**PGJM**

code	plug O.D. [mm]	hose O.D. [mm]	length [mm]
SH-PGJM-06-04	6	4	38.5
SH-PGJM-08-04	8	4	40
SH-PGJM-08-06	8	6	41
SH-PGJM-10-06	10	6	41
SH-PGJM-10-08	10	8	45.5
SH-PGJM-12-06	12	6	41
SH-PGJM-12-08	12	8	43
SH-PGJM-12-10	12	10	51

90° elbow connector



**PULM**

code	hose O.D. [mm]	length [mm]
SH-PULM-04	4	24
SH-PULM-06	6	25
SH-PULM-08	8	29
SH-PULM-10	10	37
SH-PULM-12	12	40
SH-PULM-14	14	41.5
SH-PULM-16	16	45.5

90° elbow connector



**PULC**

code	hose O.D. [inch]	length [mm]
SH-PULC-02,5	5/32	24
SH-PULC-03	3/16	24
SH-PULC-04	1/4	25
SH-PULC-05	5/16	29
SH-PULC-06	3/8	37
SH-PULC-08	1/2	40

End cap



**PPFM**

code	hose O.D. [mm]	length [mm]
SH-PPFM-04	4	18
SH-PPFM-06	6	19
SH-PPFM-08	8	21
SH-PPFM-10	10	23
SH-PPFM-12	12	25
SH-PPFM-16	16	27.5

End cap





**PPFC**


code	hose O.D. [inch]	length [mm]
SH-PPFC-02,5	5/32	18
SH-PPFC-03	3/16	18
SH-PPFC-04	1/4	19
SH-PPFC-05	5/16	21
SH-PPFC-06	3/8	23
SH-PPFC-08	1/2	25


# INDUSTRIAL PNEUMATICS - fittings


## Push-in fittings - S series

"T" connector		
		
		<b>PUTM</b>
code	hose O.D. [mm]	length [mm]
SH-PUTM-04	4	36.5
SH-PUTM-06	6	37.5
SH-PUTM-08	8	44.5
SH-PUTM-10	10	57
SH-PUTM-12	12	58
SH-PUTM-14	14	60.7
SH-PUTM-16	16	64

"T" connector		
		
		<b>PUTC</b>
code	hose O.D. [mm]	length [mm]
SH-PUTC-02,5	5/32	36.5
SH-PUTC-03	3/16	36.5
SH-PUTC-04	1/4	38
SH-PUTC-05	5/16	45
SH-PUTC-06	3/8	55
SH-PUTC-08	1/2	58

"T" connector			
			
			<b>PUTM</b>
code	1 hose O.D. [mm]	2 hose O.D. [mm]	length [mm]
SH-PUTM-04-06	4	6	37.5
SH-PUTM-04-08	4	8	41
SH-PUTM-06-04	6	4	38
SH-PUTM-06-08	6	8	41
SH-PUTM-06-10	6	10	44.5
SH-PUTM-08-04	8	4	43.5
SH-PUTM-08-06	8	6	43.5
SH-PUTM-08-10	8	10	48
SH-PUTM-08-12	8	12	48.5
SH-PUTM-10-06	10	6	56
SH-PUTM-10-08	10	8	56
SH-PUTM-10-12	10	12	58
SH-PUTM-12-08	12	8	56
SH-PUTM-12-10	12	10	57.5
SH-PUTM-14-12	14	12	60.5
SH-PUTM-16-12	16	12	65
SH-PUTM-16-14	16	14	65

"Y" connector		
		
		<b>PYM</b>
code	hose O.D. [mm]	length [mm]
SH-PYM-04	4	35.5
SH-PYM-06	6	37
SH-PYM-08	8	39.5
SH-PYM-10	10	50.5
SH-PYM-12	12	52.5
SH-PYM-16	16	55.5

"Y" connector			
			
			<b>PYM</b>
code	1 hose O.D. [mm]	2 hose O.D. [mm]	length [mm]
SH-PYM-06-04	6	4	36
SH-PYM-08-04	8	4	37
SH-PYM-08-06	8	6	37
SH-PYM-10-06	10	6	43.5
SH-PYM-10-08	10	8	44
SH-PYM-12-08	12	8	51
SH-PYM-12-10	12	10	52
SH-PYM-16-12	16	12	54.5
SH-PYM-16-14	16	14	55

# INDUSTRIAL PNEUMATICS - fittings

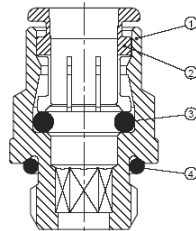
## Push-in fittings for the food industry - F series



**Material:** Nickel-plated brass  
**Working press.:** 16 bar  
**Working temp.:** From -20°C up to +150°C  
**Seal:** Viton

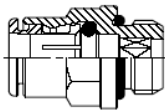
F series fittings are designed for food industry. There is no technopolymer in the fitting, parts are chemically treated with nickel-plated coating, seals are made of Viton. As a result, they are highly resistant to detergents and other chemicals. Their working temperature ranges up to +150°C. The fittings can be also used in chemical, pharmaceutical, electronic industry and in medicine.

### Construction:



- 1 Body: chemically nickel-plated brass
- 2 Gripper: chemically nickel-plated brass
- 3 Fitting seal: Viton
- 4 Thread seal: Viton

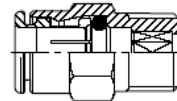
Straight connection, male thread



**R 1 NSF**

code	hose O.D. [mm]	thread size
MW-2F01001	4	M5
MW-2F01002	4	1/8"
MW-2F01003	4	1/4"
MW-2F01000	6	M5
MW-2F01007	6	1/8"
MW-2F01008	6	1/4"
MW-2F01009	8	1/8"
MW-2F01010	8	1/4"
MW-2F01011	8	3/8"
MW-2F01012	10	1/4"
MW-2F01013	10	3/8"
MW-2F01022	10	1/2"

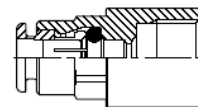
Straight connection, male tapered thread



**R 1C NSF**

code	hose O.D. [mm]	thread size
MW-2F01C02	4	1/8"
MW-2F01C07	6	1/8"
MW-2F01C08	6	1/4"
MW-2F01C09	8	1/8"
MW-2F01C10	8	1/4"
MW-2F01C11	8	3/8"
MW-2F01C13	10	1/4"
MW-2F01C14	10	3/8"

Straight connection, female thread



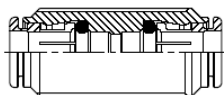
**R 2 NSF**

code	hose O.D. [mm]	thread size
MW-2F02001	4	1/8"
MW-2F02005	6	1/8"
MW-2F02006	6	1/4"
MW-2F02007	8	1/8"
MW-2F02008	8	1/4"
MW-2F02011	10	1/4"

# INDUSTRIAL PNEUMATICS - fittings

## Push-in fittings for the food industry - F series

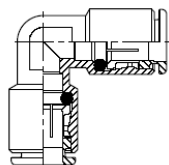
Straight connector



**R 3 NSF**

code	hose O.D. [mm]	thread size
MW-2F03001	4	M13x1
MW-2F03003	6	M15x1
MW-2F03004	8	M17x1
MW-2F03005	10	M20x1

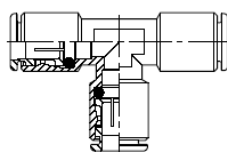
90° elbow connector



**R 4 NSF**

code	hose O.D. [mm]
MW-2F04001	4
MW-2F04003	6
MW-2F04004	8
MW-2F04005	10

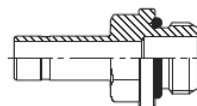
Tee connector



**R 5 NSF**

code	hose O.D. [mm]
MW-2F05001	4
MW-2F05003	6
MW-2F05004	8
MW-2F05005	10

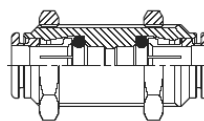
Straight connection with stem, male thread



**R 6 NSF**

code	hose O.D. [mm]	thread size
MW-2F06001	4	M5
MW-2F06002	4	1/8"
MW-2F06003	4	1/4"
MW-2F06000	6	M5
MW-2F06007	6	1/8"
MW-2F06008	6	1/4"
MW-2F06009	8	1/8"
MW-2F06010	8	1/4"
MW-2F06011	8	3/8"
MW-2F06012	10	1/4"
MW-2F06013	10	3/8"

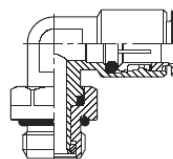
Straight bulkhead connector



**R 10 NSF**

code	hose O.D. [mm]	thread size
MW-2F11001	4	M11x1
MW-2F11003	6	M13x1
MW-2F11004	8	M15x1
MW-2F11005	10	M17x1

90° elbow swivel connection, male thread



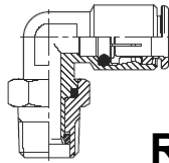
**R 31 NSF**

code	hose O.D. [mm]	thread size
MW-2F31001	4	M5
MW-2F31002	4	1/8"
MW-2F31003	4	1/4"
MW-2F31007	6	M5
MW-2F31008	6	1/8"
MW-2F31009	6	1/4"
MW-2F31010	8	1/8"
MW-2F31011	8	1/4"
MW-2F31012	8	3/8"
MW-2F31013	10	1/4"
MW-2F31014	10	3/8"
MW-2F31015	10	1/2"

# INDUSTRIAL PNEUMATICS - fittings

## Push-in fittings for the food industry - F series

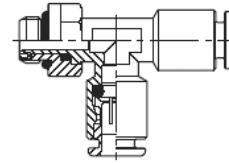
90° elbow swivel connection, male tapered thread



**R 31C NSF**

code	hose O.D. [mm]	thread size
MW-2F31C02	4	1/8"
MW-2F31C03	4	1/4"
MW-2F31C08	6	1/8"
MW-2F31C09	6	1/4"
MW-2F31C10	8	1/8"
MW-2F31C11	8	1/4"
MW-2F31C12	8	3/8"
MW-2F31C13	10	1/4"
MW-2F31C14	10	3/8"

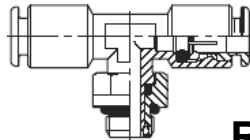
90° elbow connection, male thread



**R 38 NSF**

code	hose O.D. [mm]	thread size
MW-2F38002	4	1/8"
MW-2F38008	6	1/8"
MW-2F38009	6	1/4"
MW-2F38010	8	1/8"
MW-2F38011	8	1/4"
MW-2F38013	10	1/4"
MW-2F38014	10	3/8"

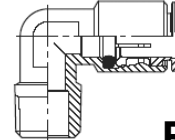
Tee swivel connection, male thread



**R 32 NSF**

code	hose O.D. [mm]	thread size
MW-2F32002	4	1/8"
MW-2F32008	6	1/8"
MW-2F32009	6	1/4"
MW-2F32010	8	1/8"
MW-2F32011	8	1/4"
MW-2F32012	8	3/8"
MW-2F32013	10	1/4"
MW-2F32014	10	3/8"

90° elbow swivel connection, male tapered thread



**R 39C NSF**

code	hose O.D. [mm]	thread size
MW-2F39C02	4	1/8"
MW-2F39C08	6	1/8"
MW-2F39C09	6	1/4"
MW-2F39C10	8	1/8"
MW-2F39C11	8	1/4"
MW-2F39C12	8	3/8"
MW-2F39C13	10	1/4"

# INDUSTRIAL PNEUMATICS - fittings

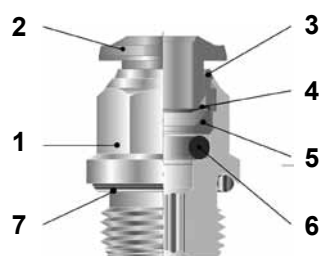
## Stainless steel push-in fittings



**Material:** AISI 316L  
**Working press.:** 15 bar  
**Vacuum press:** 0.99 bar  
**Working temp.:** From -15°C up to +225°C  
**Seal:** Viton

High quality push-in fittings made entirely of AISI 316L steel. Viton seals and lack of plastic elements ensure outstanding corrosion and chemical resistance. Widely used in chemical, food, pharmaceutical, electronic industry and in medicine.

### Construction:



1 Body: AISI 316L  
 2 Release bushing: AISI 316L  
 3 Locking bushing: AISI 316L  
 4 Safety locking ring: AISI 316L  
 5 Protecting ring: PTFE  
 6 Hose seal: Viton  
 7 Thread seal: Viton

Straight connection, male tapered thread



**60000**

code	hose O.D. [mm]	thread size
AI-60000-04-02	4	1/8"
AI-60000-04-04	4	1/4"
AI-60000-06-02	6	1/8"
AI-60000-06-04	6	1/4"
AI-60000-08-02	8	1/8"
AI-60000-08-04	8	1/4"
AI-60000-10-04	10	1/4"
AI-60000-10-06	10	3/8"
AI-60000-12-06	12	3/8"
AI-60000-12-08	12	1/2"

Straight connection, male thread





**60020**


code	hose O.D. [mm]	thread size
AI-60020-04-M5	4	M5
AI-60020-04-02	4	1/8"
AI-60020-04-04	4	1/4"
AI-60020-06-02	6	1/8"
AI-60020-06-04	6	1/4"
AI-60020-08-02	8	1/8"
AI-60020-08-04	8	1/4"
AI-60020-10-04	10	1/4"
AI-60020-10-06	10	3/8"
AI-60020-12-06	12	3/8"
AI-60020-12-08	12	1/2"


# INDUSTRIAL PNEUMATICS - fittings


## Stainless steel push-in fittings


90° elbow connection, male tapered thread		
		
<b>60110</b>		
code	hose O.D. [mm]	thread size
AI-60110-04-02	4	1/8"
AI-60110-04-04	4	1/4"
AI-60110-06-02	6	1/8"
AI-60110-06-04	6	1/4"
AI-60110-08-02	8	1/8"
AI-60110-08-04	8	1/4"
AI-60110-10-04	10	1/4"
AI-60110-10-06	10	3/8"
AI-60110-12-06	12	3/8"
AI-60110-12-08	12	1/2"

Tee connection, male tapered thread		
		
<b>60210</b>		
code	hose O.D. [mm]	thread size
AI-60210-04-02	4	1/8"
AI-60210-04-04	4	1/4"
AI-60210-06-02	6	1/8"
AI-60210-06-04	6	1/4"
AI-60210-08-02	8	1/8"
AI-60210-08-04	8	1/4"
AI-60210-10-04	10	1/4"
AI-60210-10-06	10	3/8"
AI-60210-12-06	12	3/8"
AI-60210-12-08	12	1/2"

Straight connector		
		
<b>60040</b>		
code	hose O.D. [mm]	length [mm]
AI-60040-04	4	31
AI-60040-06	6	35
AI-60040-08	8	36.5
AI-60040-10	10	42
AI-60040-12	12	48

90° elbow connection, male thread		
		
<b>60115</b>		
code	hose O.D. [mm]	thread size
AI-60115-04-M5	4	M5
AI-60115-04-02	4	1/8"
AI-60115-04-04	4	1/4"
AI-60115-06-02	6	1/8"
AI-60115-06-04	6	1/4"
AI-60115-08-02	8	1/8"
AI-60115-08-04	8	1/4"
AI-60115-10-04	10	1/4"
AI-60115-10-06	10	3/8"
AI-60115-12-06	12	3/8"
AI-60115-12-08	12	1/2"

Tee connection, male thread		
		
<b>60215</b>		
code	hose O.D. [mm]	thread size
AI-60215-04-M5	4	M5
AI-60215-04-02	4	1/8"
AI-60215-04-04	4	1/4"
AI-60215-06-02	6	1/8"
AI-60215-06-04	6	1/4"
AI-60215-08-02	8	1/8"
AI-60215-08-04	8	1/4"
AI-60215-10-04	10	1/4"
AI-60215-10-06	10	3/8"
AI-60215-12-06	12	3/8"
AI-60215-12-08	12	1/2"

90° elbow connector		
		
<b>60130</b>		
code	hose O.D. [mm]	length [mm]
AI-60130-04	4	18
AI-60130-06	6	21
AI-60130-08	8	22.5
AI-60130-10	10	26
AI-60130-12	12	30.5

# INDUSTRIAL PNEUMATICS - fittings

## Stainless steel push-in fittings

Tee connector



**60230**

code	hose O.D. [mm]	length [mm]
AI-60230-04	4	36
AI-60230-06	6	42
AI-60230-08	8	45
AI-60230-10	10	52
AI-60230-12	12	61

Straight bulkhead connector



**60050**

code	hose O.D. [mm]	length [mm]
AI-60050-04	4	31
AI-60050-06	6	35
AI-60050-08	8	37
AI-60050-10	10	42
AI-60050-12	12	48



# INDUSTRIAL PNEUMATICS - fittings

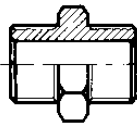
## Threaded fittings - A series



**Material:** Nickel-plated brass  
**Working press.:** Up to 60 bar

Threaded fittings (A series) are designed to connect different types of pneumatic elements (including hoses). In order to get a tight connection, additional sealing must be most often applied. It is usually PTFE tape or sealant (tapered thread) or aluminium / copper washers (parallel threads). Some fittings are equipped with NBR O-rings.

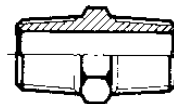
Adapter, male thread



**A 1**

code	thread size	thread size
MW-2101A00	M5	M5
MW-2101000	M5	1/8"
MW-2101001	1/8"	1/8"
MW-2101002	1/8"	1/4"
MW-2101003	1/8"	3/8"
MW-2101004	1/4"	1/4"
MW-2101005	1/4"	3/8"
MW-2101006	1/4"	1/2"
MW-2101007	3/8"	3/8"
MW-2101008	3/8"	1/2"
MW-2101009	1/2"	1/2"
MW-2101010	1/2"	3/4"
MW-2101011	3/4"	3/4"

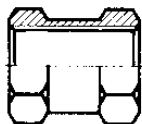
Adapter, male tapered thread



**A 2**

code	thread size	thread size
MW-2102001	1/8"	1/8"
MW-2102002	1/8"	1/4"
MW-2102003	1/8"	3/8"
MW-2102004	1/4"	1/4"
MW-2102005	1/4"	3/8"
MW-2102006	1/4"	1/2"
MW-2102007	3/8"	3/8"
MW-2102008	3/8"	1/2"
MW-2102009	1/2"	1/2"
MW-2102010	1/2"	3/4"
MW-2102011	3/4"	3/4"

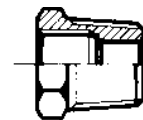
Adapter, female thread



**A 3**

code	thread size
MW-2103000	M5
MW-2103001	1/8"
MW-2103002	1/4"
MW-2103003	3/8"
MW-2103004	1/2"

Adapter, male tapered / female thread



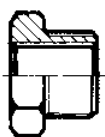
**A 4**

code	male thread size	female thread size
MW-2104001	1/4"	1/8"
MW-2104002	3/8"	1/8"
MW-2104003	3/8"	1/4"
MW-2104004	1/2"	1/4"
MW-2104005	1/2"	3/8"
MW-2104006	3/4"	1/2"

# INDUSTRIAL PNEUMATICS - fittings

## Threaded fittings - A series

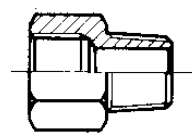
Adapter, male / female thread



**A 4/2**

code	male thread size	female thread size
MW-2151000	1/8"	M5
MW-2151001	1/4"	1/8"
MW-2151002	3/8"	1/8"
MW-2151003	3/8"	1/4"
MW-2151004	1/2"	1/4"
MW-2151005	1/2"	3/8"

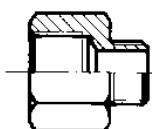
Adapter, male tapered / female thread



**A 5**

code	male thread size	female thread size
MW-2105001	1/8"	1/8"
MW-2105002	1/8"	1/4"
MW-2105003	1/4"	1/4"
MW-2105004	1/4"	3/8"
MW-2105005	3/8"	3/8"
MW-2105006	3/8"	1/2"
MW-2105007	1/2"	1/2"

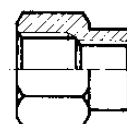
Adapter, male / female thread



**A 5/2**

code	male thread size	female thread size
MW-2152001	M5	1/8"
MW-2152002	1/8"	1/8"
MW-2152003	1/8"	1/4"
MW-2152004	1/4"	1/4"
MW-2152005	1/4"	3/8"
MW-2152006	3/8"	3/8"
MW-2152007	3/8"	1/2"
MW-2152008	1/2"	1/2"

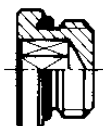
Adapter, female thread



**A 6**

code	thread size	thread size
MW-2106001	1/8"	1/4"
MW-2106002	1/8"	3/8"
MW-2106003	1/4"	3/8"
MW-2106004	1/4"	1/2"
MW-2106005	3/8"	1/2"

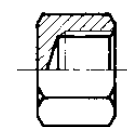
Plug, male thread



**A 7**

code	thread size
MW-2107000	M5
MW-2107001	1/8"
MW-2107002	1/4"
MW-2107003	3/8"
MW-2107004	1/2"
MW-2107005	M7

End cap, female thread



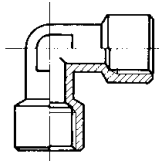
**A 8**

code	thread size
MW-2108001	1/8"
MW-2108002	1/4"
MW-2108003	3/8"
MW-2108004	1/2"

# INDUSTRIAL PNEUMATICS - fittings

## Threaded fittings - A series

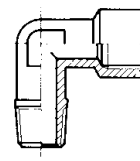
90° elbow, female thread



**A 9**

code	thread size
MW-2109001	1/8"
MW-2109002	1/4"
MW-2109003	3/8"
MW-2109004	1/2"

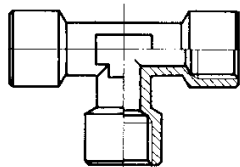
90° elbow, male tapered / female thread



**A 10**

code	male thread size	female thread size
MW-2110001	1/8"	1/8"
MW-2110002	1/4"	1/4"
MW-2110003	3/8"	3/8"
MW-2110004	1/2"	1/2"

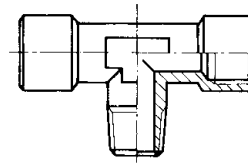
Tee adapter, female thread



**A 11**

code	thread size
MW-2111001	1/8"
MW-2111002	1/4"
MW-2111003	3/8"
MW-2111004	1/2"

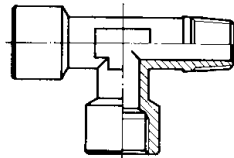
Tee adapter, male tapered / female thread



**A 12**

code	male thread size	female thread size
MW-2112001	1/8"	1/8"
MW-2112002	1/4"	1/4"
MW-2112003	3/8"	3/8"
MW-2112004	1/2"	1/2"

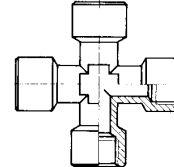
Tee adapter, male tapered / female thread



**A 13**

code	male thread size	thread size
MW-2113001	1/8"	1/8"
MW-2113002	1/4"	1/4"
MW-2113003	3/8"	3/8"
MW-2113004	1/2"	1/2"

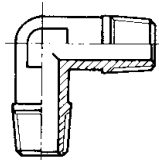
Cross adapter, female thread



**A 14**

code	thread size
MW-2114001	1/8"
MW-2114002	1/4"
MW-2114003	3/8"

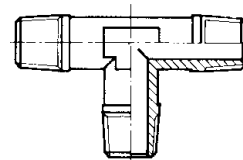
90° elbow, male tapered thread



**A 15**

code	thread size
MW-2115001	1/8"
MW-2115002	1/4"
MW-2115003	3/8"
MW-2115004	1/2"

Tee adapter, male tapered thread



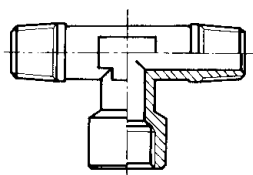
**A 16**

code	thread size
MW-2116001	1/8"
MW-2116002	1/4"
MW-2116003	3/8"
MW-2116004	1/2"

# INDUSTRIAL PNEUMATICS - fittings

## Threaded fittings - A series

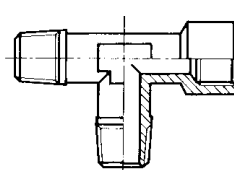
Tee adapter, male tapered / female thread



**A 17**

code	male thread size	female thread size
MW-2117001	1/4"	1/4"
MW-2117002	1/8"	1/8"
MW-2117003	3/8"	3/8"
MW-2117004	1/2"	1/2"

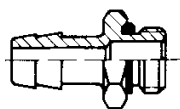
Tee adapter, male tapered / female thread



**A 18**

code	male thread size	female thread size
MW-2118000	1/8"	1/8"
MW-2118001	1/4"	1/4"
MW-2118002	3/8"	3/8"
MW-2118003	1/2"	1/2"

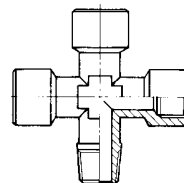
Hose fitting with male thread



**A 19**

code	fitting diameter [mm]	male thread size
MW-2119001	7	1/8"
MW-2119002	7	1/4"
MW-2119003	8	1/8"
MW-2119004	9	1/8"
MW-2119005	9	1/4"
MW-2119006	9	3/8"
MW-2119007	12	1/4"
MW-2119008	12	3/8"
MW-2119009	12	1/2"
MW-2119010	17	3/8"
MW-2119011	17	1/2"

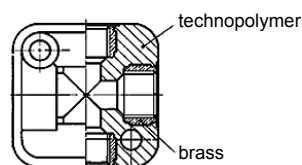
Cross adapter, male tapered / female thread



**A 20**

code	male thread size	female thread size
MW-2120001	1/8"	1/8"
MW-2120002	1/4"	1/4"

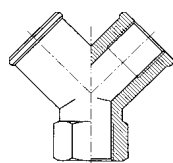
Connection block 13 bar, 50°C



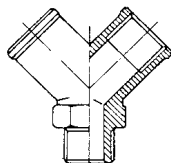
**A 21**

code	thread size.	H x L dimensions [mm]
MW-2121001	1/8"	17.5 x 31
MW-2121002	1/4"	24 x 40
MW-2121003	3/8"	28 x 50
MW-2121004	1/2"	35 x 50

Tee adapter



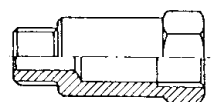
**A 23**



**A 24**

code	thread size.
<b>A 23</b>	
MW-2123001	1/8"
MW-2123002	1/4"
MW-2123003	3/8"
MW-2123004	1/2"
<b>A 24</b>	
MW-2124001	1/8"
MW-2124002	1/4"
MW-2124003	3/8"
MW-2124004	1/2"

Adapter, male / female thread



**A 25**

code	thread size.	length [mm]
MW-2150003	1/8"	22
MW-2150004	1/8"	42
MW-2150005	1/8"	51
MW-2150006	1/4"	35
MW-2150007	1/4"	51

# INDUSTRIAL PNEUMATICS - fittings

## Stainless steel threaded fittings

**Material:** AISI 316L

**Working press.:** 140 bar

**Working temp.:** From -20°C up to +225°C

Nipple, male thread



**62000**

code	thread size [inch]	length [mm]	spanner size [mm]
AI-62000-02	1/8	19.5	11
AI-62000-04	1/4	27	14
AI-62000-06	3/8	28	17
AI-62000-08	1/2	33.5	22
AI-62000-12	3/4	40	27

Reducing nipple, male thread



**62020**

code	thread size 1 [inch]	thread size 2 [inch]	length [mm]	spanner size [mm]
AI-62020-02-04	1/8	1/4	23.5	14
AI-62020-02-06	1/8	3/8	24	17
AI-62020-04-06	1/4	3/8	27.5	17
AI-62020-04-08	1/4	1/2	30.5	22
AI-62020-06-08	3/8	1/2	31	22
AI-62020-08-12	1/2	3/4	37.5	27

Reducing adapter, male / female thread



**62040**

code	thread size 1 [inch]	thread size 2 [inch]	length [mm]	spanner size [mm]
AI-62040-02-04	1/8	1/4	22	17
AI-62040-04-06	1/4	3/8	27	22
AI-62040-04-08	1/4	1/2	30	24
AI-62040-06-08	3/8	1/2	30.5	24
AI-62040-08-12	1/2	3/4	35	32

Reducing adapter, female / male thread



**62080**

code	thread size 1 [inch]	thread size 2 [inch]	length [mm]	spanner size [mm]
AI-62080-04-02	1/4	1/8	16	14
AI-62080-06-02	3/8	1/8	16.5	17
AI-62080-06-04	3/8	1/4	16.5	17
AI-62080-08-04	1/2	1/4	19.5	22
AI-62080-08-06	1/2	3/8	19.5	22
AI-62080-12-08	3/4	1/2	23.5	27

Muff, female thread



**62300**

code	thread size [inch]	length [mm]	spanner size [mm]
AI-62300-02	1/8	15	14
AI-62300-04	1/4	22	17
AI-62300-06	3/8	24	22
AI-62300-08	1/2	30	27
AI-62300-12	3/4	32	32

Reducing muff, female thread



**62310**

code	thread size 1 [inch]	thread size 2 [inch]	length [mm]	spanner size [mm]
AI-62310-02-04	1/8	1/4	19	17
AI-62310-04-06	1/4	3/8	23	22
AI-62310-06-08	3/8	1/2	27.5	24
AI-62310-08-12	1/2	3/4	30	30

# INDUSTRIAL PNEUMATICS - fittings

## Stainless steel threaded fittings

Plug, male thread



**62320**

code	thread size [inch]	length [mm]	spanner size [mm]
AI-62320-02	1/8	10	14
AI-62320-04	1/4	13	17
AI-62320-06	3/8	13.5	19
AI-62320-08	1/2	14.5	24
AI-62320-12	3/4	16	30

Tee, female thread



**62400**

code	thread size [inch]	spanner size [mm]
AI-62400-02	1/8	12
AI-62400-04	1/4	12
AI-62400-06	3/8	15
AI-62400-08	1/2	20

Tee, male / female thread



**62440**

code	thread size [inch]	spanner size [mm]
AI-62440-02	1/8	12
AI-62440-04	1/4	12
AI-62440-06	3/8	15
AI-62440-08	1/2	20

Tee, male / female thread



**62450**

code	thread size [inch]	spanner size [mm]
AI-62450-02	1/8	12
AI-62450-04	1/4	12
AI-62450-06	3/8	15
AI-62450-08	1/2	20

90° elbow, female thread



**62510**

code	thread size [inch]	spanner size [mm]
AI-62510-02	1/8	12
AI-62510-04	1/4	12
AI-62510-06	3/8	15
AI-62510-08	1/2	20

90° elbow, male / female thread



**62520**

code	thread size [inch]	spanner size [mm]
AI-62520-02	1/8	12
AI-62520-04	1/4	12
AI-62520-06	3/8	15
AI-62520-08	1/2	20

# INDUSTRIAL PNEUMATICS - fittings

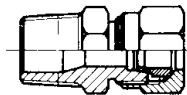
## Fittings with cutting ring - B series



**Material:** Nickel-plated brass  
**Working press.:** Up to 60 bar

Fittings with a cutting ring are designed to connect copper pipes and hoses made of plastic. It is recommended to use an internal bush (B 12) if the fitting connects with the hose.

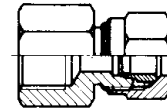
Straight connection, male tapered thread



**B 1**

code	hose O.D. / I.D.	thread size
MW-2201001	4/2	1/8"
MW-2201002	6/4	1/8"
MW-2201003	6/4	1/4"
MW-2201004	8/6	1/8"
MW-2201005	8/6	1/4"
MW-2201006	8/6	3/8"
MW-2201007	10/8	1/4"
MW-2201008	10/8	3/8"
MW-2201009	10/8	1/2"
MW-2201010	12/10	3/8"
MW-2201011	12/10	1/2"
MW-2201012	15/12	1/2"

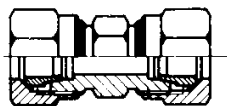
Straight connection, female thread



**B 2**

code	hose O.D. / I.D.	thread size
MW-2202001	6/4	1/8"
MW-2202002	6/4	1/4"
MW-2202003	8/6	1/8"
MW-2202004	8/6	1/4"
MW-2202005	8/6	3/8"
MW-2202006	10/8	1/4"
MW-2202007	10/8	3/8"

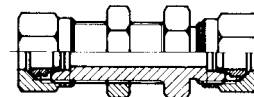
Straight connector



**B 3**

code	hose O.D. / I.D.
MW-2203001	4/2
MW-2203002	6/4
MW-2203003	8/6
MW-2203004	10/8
MW-2203005	12/10
MW-2203006	15/12

Straight bulkhead connector



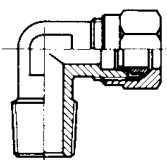
**B 4**

code	hose O.D. / I.D.
MW-2204001	6/4
MW-2204002	8/6
MW-2204003	10/8
MW-2204004	12/10
MW-2204005	15/12

# INDUSTRIAL PNEUMATICS - fittings

## Fittings with cutting ring - B series

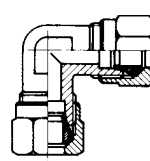
90° elbow connection, male tapered thread



**B 5**

code	hose O.D. / I.D.	thread size
MW-2205001	4/2	1/8"
MW-2205002	6/4	1/8"
MW-2205003	6/4	1/4"
MW-2205004	8/6	1/8"
MW-2205005	8/6	1/4"
MW-2205006	8/6	3/8"
MW-2205007	10/8	1/4"
MW-2205008	10/8	3/8"
MW-2205009	10/8	1/2"
MW-2205010	12/10	3/8"
MW-2205011	12/10	1/2"
MW-2205012	15/12	1/2"

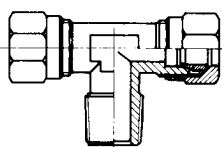
90° elbow connector



**B 6**

code	hose O.D. / I.D.
MW-2206001	4/2
MW-2206002	6/4
MW-2206003	8/6
MW-2206004	10/8
MW-2206005	12/10
MW-2206006	15/12

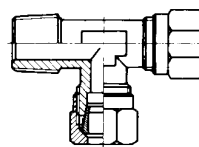
Tee connection, male tapered thread



**B 7**

code	hose O.D. / I.D.	thread size
MW-2207001	4/2	1/8"
MW-2207002	6/4	1/8"
MW-2207003	6/4	1/4"
MW-2207004	8/6	1/8"
MW-2207005	8/6	1/4"
MW-2207006	8/6	3/8"
MW-2207007	10/8	1/4"
MW-2207008	10/8	3/8"
MW-2207010	12/10	3/8"
MW-2207011	12/10	1/2"
MW-2207012	15/12	1/2"

Tee connection, male tapered thread



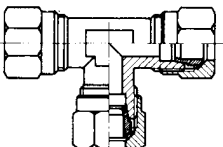
**B 8**

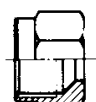
code	hose O.D. / I.D.	thread size
MW-2208000	4/2	1/8"
MW-2208001	6/4	1/8"
MW-2208002	6/4	1/4"
MW-2208003	8/6	1/8"
MW-2208004	8/6	1/4"
MW-2208005	8/6	3/8"
MW-2208006	10/8	1/4"
MW-2208007	10/8	3/8"
MW-2208009	12/10	3/8"
MW-2208010	12/10	1/2"
MW-2208011	15/12	1/2"




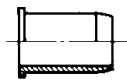
# INDUSTRIAL PNEUMATICS - fittings

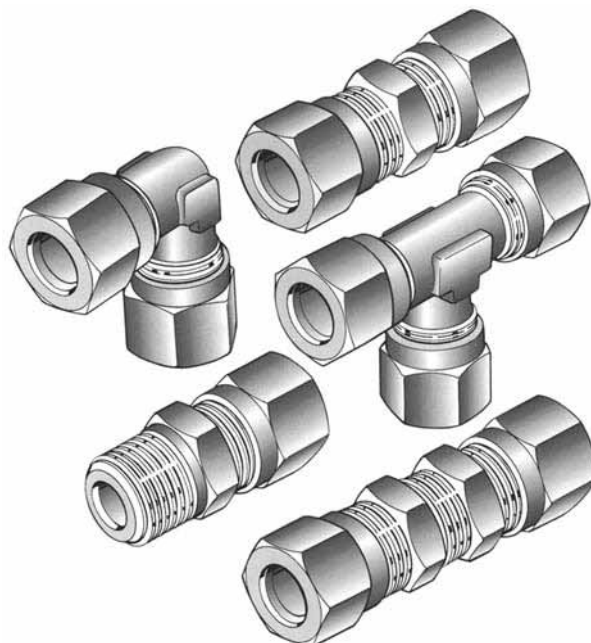
## Fittings with cutting ring - B series

Tee connector	
	
<b>B 9</b>	
code	hose O.D. / I.D.
MW-2209001	4/2
MW-2209002	6/4
MW-2209003	8/6
MW-2209004	10/8
MW-2209005	12/10
MW-2209006	15/12

Nut		
		
<b>B 10</b>		
code	hose O.D. / I.D.	thread size
MW-2210001	4/2	M8x1
MW-2210002	6/4	M10x1
MW-2210003	8/6	M12x1
MW-2210004	10/8	M16x1.5
MW-2210005	12/10	M18x1.5
MW-2210006	15/12	M22x1.5

Cutting ring	
	
<b>B 11</b>	
code	hose O.D. / I.D.
MW-2211001	4/2
MW-2211002	6/4
MW-2211003	8/6
MW-2211004	10/8
MW-2211005	12/10
MW-2211006	15/12

Reinforcing sleeve	
	
<b>B 12</b>	
code	hose O.D. / I.D.
MW-2212001	6/4
MW-2212002	8/6
MW-2212003	10/8
MW-2212004	12/10
MW-2212005	15/12



# INDUSTRIAL PNEUMATICS - fittings

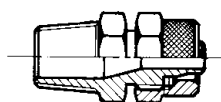
## Tubular fittings - C series



**Material:** Nickel-plated brass  
**Working press.:** Up to 18 bar

Tubular fittings are designed to connect hoses made of soft plastic materials. To assemble the fitting, the hose must be pushed onto the fitting and tightened up with the nut.

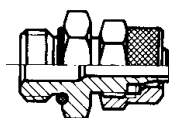
Straight connection, male tapered thread



**C 1**

code	hose O.D. / I.D.	thread size
MW-2301017	5/3	1/8"
MW-2301001	6/4	1/8"
MW-2301002	6/4	1/4"
MW-2301003	8/6	1/8"
MW-2301004	8/6	1/4"
MW-2301005	8/6	3/8"
MW-2301020	10/8	1/8"
MW-2301006	10/8	1/4"
MW-2301007	10/8	3/8"
MW-2301008	10/8	1/2"
MW-2301009	12/10	3/8"
MW-2301010	12/10	1/2"
MW-2301015	15/12.5	1/2"

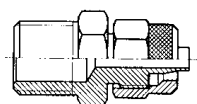
Straight connection, male thread



**C 1/2**

code	hose O.D. / I.D.	thread size
MW-2351001	4/2	M5
MW-2351002	6/4	M5
MW-2351003	6/4	1/8"
MW-2351004	6/4	1/4"
MW-2351005	8/6	1/8"
MW-2351006	8/6	1/4"
MW-2351007	8/6	3/8"
MW-2351008	10/8	1/4"
MW-2351009	10/8	3/8"
MW-2351010	10/8	1/2"
MW-2351011	12/10	3/8"
MW-2351012	12/10	1/2"

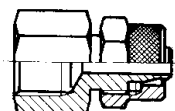
Straight connection, male thread



**C 1/C**

code	hose O.D. / I.D.	thread size
MW-2356001	5/3	M5
MW-2356002	6/4	M6
MW-2356003	6/4	M12x1.5
MW-2356004	6/4	3/8"
MW-2356005	8/6	M12x1.5

Straight connection, female thread



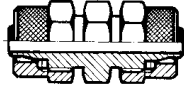
**C 2**

code	hose O.D. / I.D.	thread size
MW-2302001	6/4	1/8"
MW-2302002	6/4	1/4"
MW-2302012	6/4	3/8"
MW-2302003	8/6	1/8"
MW-2302004	8/6	1/4"
MW-2302005	8/6	3/8"
MW-2302006	10/8	1/4"
MW-2302007	10/8	3/8"
MW-2302008	10/8	1/2"

# INDUSTRIAL PNEUMATICS - fittings

## Tubular fittings - C series

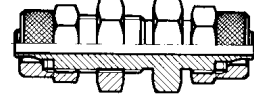
Straight connector



**C 3**

code	hose O.D. / I.D.
MW-2303001	6/4
MW-2303002	8/6
MW-2303003	10/8
MW-2303004	12/10

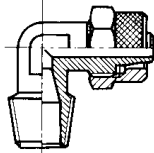
Straight bulkhead connector



**C 4**

code	hose O.D. / I.D.
MW-2304001	6/4
MW-2304002	8/6
MW-2304003	10/8
MW-2304004	12/10

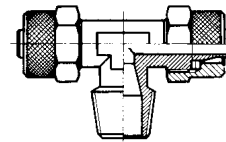
90° elbow connection, male tapered thread



**C 5**

code	hose O.D. / I.D.	thread size
MW-2305016	5/3	1/8"
MW-2305001	6/4	1/8"
MW-2305002	6/4	1/4"
MW-2305003	8/6	1/8"
MW-2305004	8/6	1/4"
MW-2305005	8/6	3/8"
MW-2305006	10/8	1/4"
MW-2305007	10/8	3/8"
MW-2305008	10/8	1/2"
MW-2305009	12/10	3/8"
MW-2305010	12/10	1/2"
MW-2305017	15/12.5	1/2"

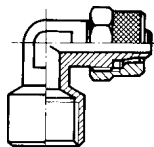
Tee connection, male tapered thread



**C 7**

code	hose O.D. / I.D.	thread size
MW-2307015	5/3	1/8"
MW-2307001	6/4	1/8"
MW-2307002	6/4	1/4"
MW-2307003	8/6	1/8"
MW-2307004	8/6	1/4"
MW-2307005	8/6	3/8"
MW-2307006	10/8	1/4"
MW-2307007	10/8	3/8"
MW-2307008	10/8	1/2"
MW-2307009	12/10	3/8"
MW-2307010	12/10	1/2"
MW-2307016	15/12.5	1/2"

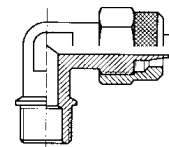
90° elbow connection, female thread



**C5/F**

code	hose O.D. / I.D.	thread size
MW-2352001	6/4	1/8"
MW-2352002	8/6	1/4"

90° elbow connection, male thread



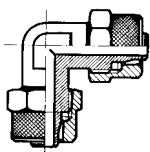
**C 5/C**

code	hose O.D. / I.D.	thread size
MW-2357001	6/4	M12x1.5
MW-2357002	8/6	M12x1.5

# INDUSTRIAL PNEUMATICS - fittings

## Tubular fittings - C series

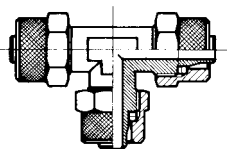
90° elbow connector



**C 6**

code	hose O.D. / I.D.
MW-2306001	6/4
MW-2306002	8/6
MW-2306003	10/8
MW-2306004	12/10
MW-2306006	15/12.5

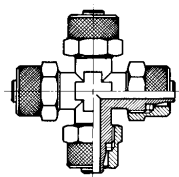
Tee connector



**C 9**

code	hose O.D. / I.D.
MW-2309001	6/4
MW-2309002	8/6
MW-2309003	10/8
MW-2309004	12/10
MW-2309007	15/12.5

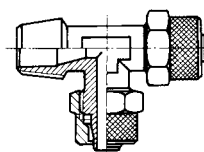
Cross connector



**C 11**

code	hose O.D. / I.D.
MW-2311001	6/4
MW-2311002	8/6
MW-2311003	10/8

Tee connection, male tapered thread



**C 8**

code	hose O.D. / I.D.	thread size
MW-2308012	5/3	1/8"
MW-2308001	6/4	1/8"
MW-2308002	6/4	1/4"
MW-2308003	8/6	1/8"
MW-2308004	8/6	1/4"
MW-2308005	8/6	3/8"
MW-2308006	10/8	1/4"
MW-2308007	10/8	3/8"
MW-2308008	10/8	1/2"
MW-2308009	12/10	3/8"
MW-2308010	12/10	1/2"

Nut



**C 10**

code	hose O.D. / I.D.	thread size
MW-2310001	4/2	M7x0.5
MW-2310009	5/3	M7x0.5
MW-2310002	6/4	M8x0.5
MW-2310010	6/4	M8x0.75
MW-2310003	6/4	M10x1
MW-2310004	8/6	M12x1
MW-2310005	10/8	M14x1
MW-2310006	12/10	M16x1
MW-2310011	15/12.5	M20x1



# INDUSTRIAL PNEUMATICS - fittings

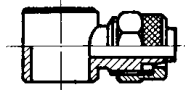
## BANJO fittings - D series



**Material:** Nickel-plated brass  
**Working press.:** Up to 18 bar

BANJO fittings enable connection in any required position. D series includes: fittings with cutting rings (D 17), female threads (D 12), tubular ends (D 5, D 6) and BANJO passing through bolts. Bolts can also be used for connection of BANJO fittings from R series (R 13, R 14, R 28 and R 29).

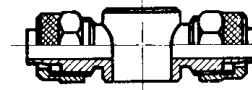
BANJO 90° fitting (body)



**D 5**

code	hose O.D. / I.D.	bolt hole
MW-2405000	4/2	M5
MW-2405013	5/3	1/8"
MW-2405018	5/3	M5
MW-2405001	6/4	M5
MW-2405002	6/4	1/8"
MW-2405003	6/4	1/4"
MW-2405005	8/6	1/8"
MW-2405006	8/6	1/4"
MW-2405007	8/6	3/8"
MW-2405009	10/8	1/4"
MW-2405010	10/8	3/8"
MW-2405011	10/8	1/2"
MW-2405017	12/10	3/8"
MW-2405012	12/10	1/2"

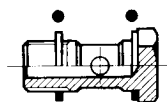
BANJO tee (body)



**D 6**

code	hose O.D. / I.D.	bolt hole
MW-2406001	6/4	1/8"
MW-2406002	6/4	1/4"
MW-2406004	8/6	1/8"
MW-2406005	8/6	1/4"
MW-2406006	8/6	3/8"
MW-2406008	10/8	1/4"
MW-2406009	10/8	3/8"
MW-2406010	10/8	1/2"
MW-2406011	12/10	1/2"

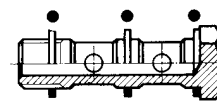
BANJO bolt



**D 7**

code	thread size
with washer (R13, R14, D12, D17, D5, D6)	
MW-2407001	M5
MW-2407002	1/8"
MW-2407003	1/4"
MW-2407004	3/8"
MW-2407005	1/2"
MW-2407006	M12x1.5
with O-ring (R28, R29)	
MW-2407102	1/8"
MW-2407103	1/4"
MW-2407104	3/8"

BANJO double bolt



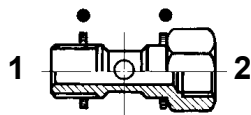
**D 8**

code	thread size
with washer (R13, R14, D12, D17, D5, D6)	
MW-2408001	1/8"
MW-2408002	1/4"
MW-2408003	3/8"
MW-2408004	1/2"
with O-ring (R28, R29)	
MW-2408102	1/8"
MW-2408103	1/4"
MW-2408104	3/8"

# INDUSTRIAL PNEUMATICS - fittings

## BANJO fittings - D series

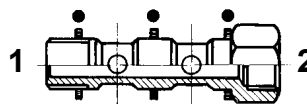
BANJO bolt + female thread



**D 9**

code	thread size 1	thread size 2
with washer (R13, R14, D12, D17, D5, D6)		
MW-2409001	1/8"	1/8"
MW-2409002	1/4"	1/4"
MW-2409003	3/8"	3/8"
MW-2409004	1/2"	1/2"
with O-ring (R28, R29)		
MW-2409102	1/8"	1/8"
MW-2409103	1/4"	1/4"
MW-2409104	3/8"	3/8"

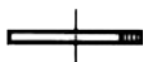
BANJO double bolt + female thread



**D 10**

code	thread size 1	thread size 2
with washer (R13, R14, D12, D17, D5, D6)		
MW-2410001	1/8"	1/8"
MW-2410002	1/4"	1/4"
MW-2410003	3/8"	3/8"
MW-2410004	1/2"	1/2"
with O-ring (R28, R29)		
MW-2410102	1/8"	1/8"
MW-2410103	1/4"	1/4"
MW-2410104	3/8"	3/8"

Aluminium washer



**D 11**

code	bolt hole
MW-2411001	M5 (polyamide)
MW-2411002	1/8"
MW-2411003	1/4"
MW-2411004	3/8"
MW-2411005	1/2"

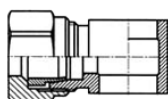
90° BANJO fitting (body) with female thread



**D 12**

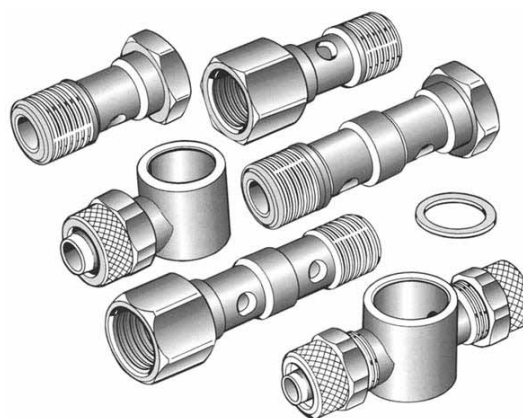
code	thread size	bolt hole
MW-2412001	1/8"	1/8"
MW-2412002	1/4"	1/4"
MW-2412003	3/8"	3/8"

90° BANJO fitting (body)

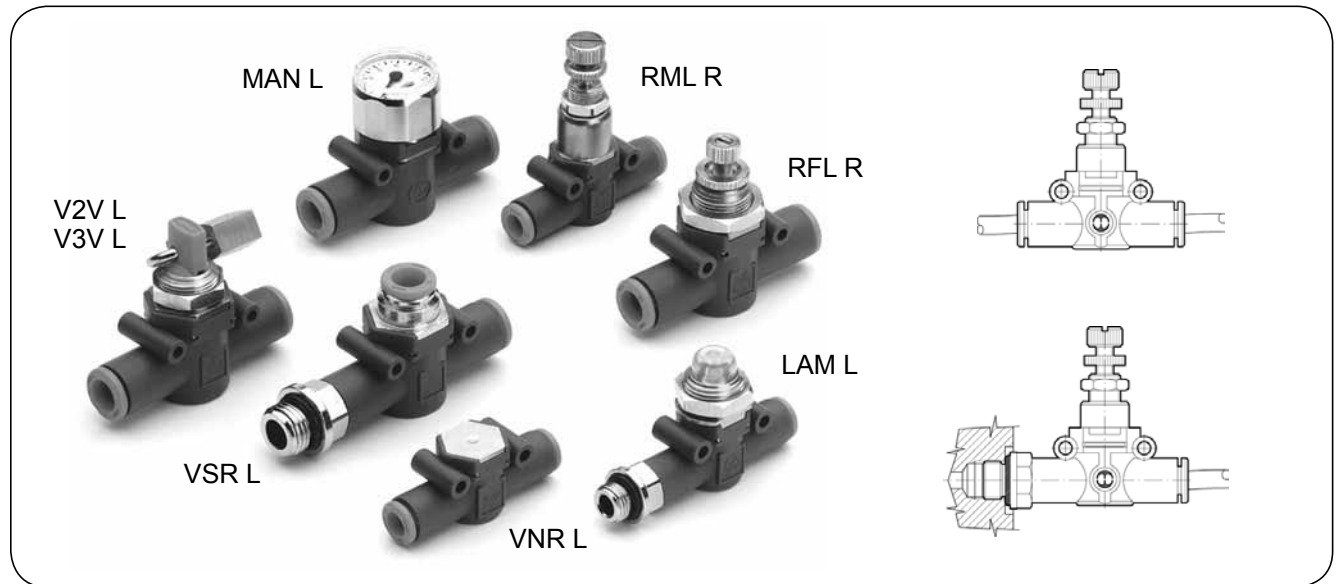


**D 17**

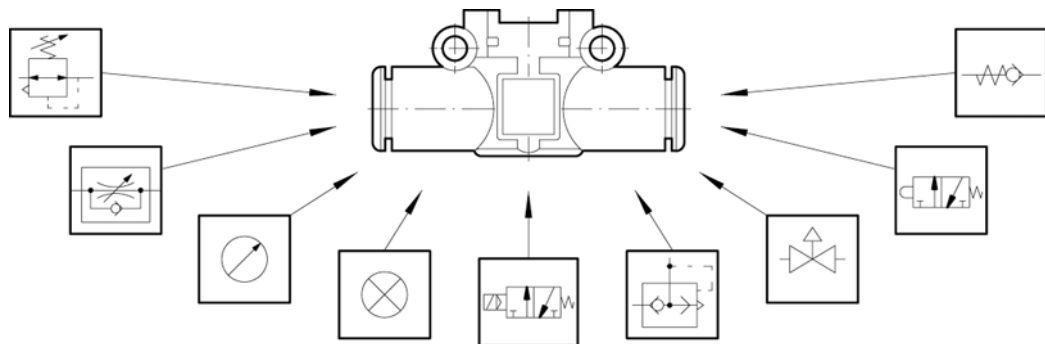
code	hose O.D. / I.D.	bolt hole
MW-2417006	4/2	1/8"
MW-2417002	6/4	1/8"
MW-2417003	6/4	1/4"
MW-2417004	8/6	1/8"
MW-2417005	8/6	1/4"



## LINE ON LINE range of products



Line on Line is an exclusive range of products designed for pneumatic systems. They feature high effectiveness, small dimensions and compact design. The modularity of their construction allows parallel, serial or combined parallel-serial connection. Available with two FOX push-in fittings (for pipe-pipe connection), or with a male thread and a FOX push-in fitting (for thread-pipe connection). Threaded connections are made of nickel-plated brass and the body of technopolymer, which make these connectors very lightweight. Using LINE ON LINE family connectors, any pneumatic function can be realized at any point of the system. Permanent marking of the body with a function symbol and flow direction facilitates identification and assembly.



Line on Line family connectors consists of the following products:

- RFL R - throttle check valves, regulate the air flow stream, used e.g. to regulate speed in pneumatic actuators,
- RML R (RMC, RMS) - miniature pressure reducing valves, regulates air pressure in the system,
- VSR L - quick drain valves,
- VNR L - check valves,
- V2V L and V3V L - shut-off valves,
- MAN L - connector with pressure gauge,
- LAM L - pneumatic pressure indicator,
- SOV L - solenoid valves.

# INDUSTRIAL PNEUMATICS - valves

## Ball valves



### Mini ball valve 6560 type

**Body material:** Nickel-plated brass  
**Ball material:** Chromium-plated brass  
**Ball seal:** PTFE  
**Spindle seal:** NBR  
**Working temp.:** From -20°C up to +80°C

General purpose valve designed for industrial installations. Widely used for air, gases, water, chemicals, petro-chemical products.

code	hose O.D. [mm]	flow diameter [mm]	length [mm]	working pressure [bar]
AI-6560-04	4	3	44	20
AI-6560-06	6	5	48	20
AI-6560-08	8	5.5	48	20
AI-6560-10	10	8	58.5	20
AI-6560-12	12	10	66	20



### Mini ball valve HVFF type

**Body material:** Plastic  
**Spindle seal:** NBR  
**Working temp.:** From -20°C up to +80°C

A valve intended for pneumatic installations. When power supply is shut off, the system is vented through the holes in the handle to enable maintenance and repairs.

code	hose O.D. [mm]	height [mm]	length [mm]	working pressure [bar]
SH-HVFF-06	6	40.5	52.4	10
SH-HVFF-08	8	40.5	55	10
SH-HVFF-10	10	41	62	10
SH-HVFF-12	12	41	68.4	10



## Distribution valves

Distribution valves control flow direction of compressed air to enable connection or separation of air streams. Most often distribution valves play a role of simple controllers for regulating units in a pneumatic system. They are used to start and stop e.g. a pneumatic actuator either one or two-directionally, depending on the valve type. Separation and switching of streams are performed by cooperation of movable and fixed mechanical parts of the valve.

According to the type of actuation, the valves are divided into:

- manual,
- mechanical,
- electric,
- pneumatic.

In pneumatic systems, distribution valves are located between basic pneumatic units and elements, to which they are connected with hose assemblies or mounting panels. Every change of the position of a control element allows to obtain different combinations of connection between different units of the pneumatic system. The distribution valve can connect the compressed air outlet with one working chamber of the pneumatic system, simultaneously the other chamber to the atmosphere, to cause movement of the actuator in a specific direction (fig. 1a). If the actuator is to move in the opposite direction, the connections need to be reversed. It is achieved by changing the position of the valve control element (fig. 1b). It is also possible to stop the actuator by disconnection of the compressed air and atmosphere chambers of the actuator (fig. 1c). Thus the distribution valves can start, stop and reverse the operation of the actuator.

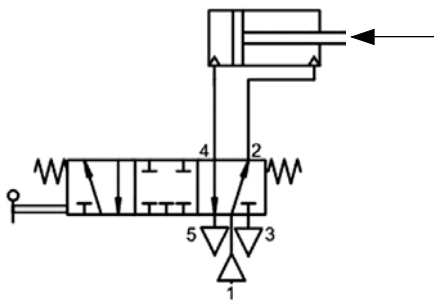


fig. 1a

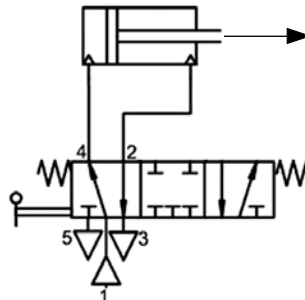


fig. 1b

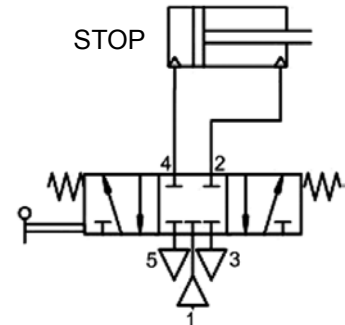
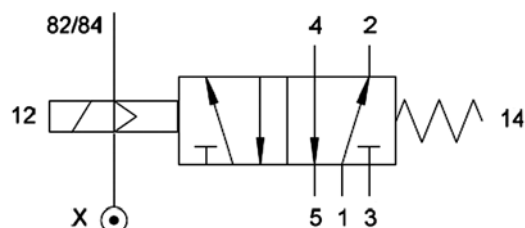


fig. 1c

The distribution valves are pictured using graphic symbols in the form of a set of adjacent equal squares. The number of squares corresponds to the number of modes of the distribution valve control unit. The number of connection ports drawn next to one of the squares indicates the number of paths in the valve. These connections are drawn outside of that particular square which corresponds to normal (initial) position of the valve. The lines drawn inside the squares show paths between connections for the corresponding position of the valve control element, the arrows show the direction of air flow. A cut-off of the flow to a particular connection port is depicted by transverse lines whereas connections of paths inside the valve are signified by dots at the intersection of those lines. Air outlet to the atmosphere is marked by empty triangle whose vertex indicates the direction of the outlet flow. In the case of direct outlet flow into the atmosphere the triangle is drawn next to the valve symbol. In the case of outlet flow to the atmosphere through the connection port which allows connection of a hose assembly, a triangle is drawn away from the valve symbol. Symbols indicating the external type of control are added to the distribution valve symbol perpendicular to the direction of connection port. The power supply of the valve as well as the outlet flow to the atmosphere is signified by an empty triangle placed away from the distribution valve symbol in the way that the vertex faces the valve. The complete valve symbol should also include designation of all the connection ports that are built into the valve. A designation system is defined by ISO 5599/3 standard. According to the standard, the connection ports are labelled by digits. The port designations according to ISO 5599/3 standard are described further in the catalogue.

## Distribution valves



- 1 - supply connection port,
- 2, 4 - working or outlet connection ports,
- 3, 5 - outlet to the atmosphere (venting connection ports),
- 12, 14 - control connection ports,
- 82, 84 - venting connection ports of supporting valves,
- X - pilots external supply

fig. 2. Types and markings of connection ports in control valves.

Classification of basic valves:

According to the number of ways (equal to the number of connection ports):

- 2-way,
- 3-way,
- 5-way.

According to the number of positions (number of adjacent squares on a valve symbol):

- 2-position,
- 3-position.

Note: Please remember that only one valve position can be active at the time.

Functional valve symbols	
Valve 2/2 NC (2-way / 2-position, normally closed)	
Valve 2/2 NO (2-way / 2-position, normally open)	
Valve 3/2 NC (3-way / 2-position, normally closed)	
Valve 3/2 NO (3-way / 2-position, normally open)	
Valve 5/2 (5-way / 2-position)	
Valve 5/3 CC (5-way / 3-position, shut-off in the middle position)	
Valve 5/3 OC (5-way / 3-position, deaerated in middle position)	
Valve 5/3 PC (5-way / 3-position, aerated in middle position)	
Mechanical plunger control	
Mechanical roller cam control	
Mechanical bent roller cam control	
Manual button control	
Manual lever control	
Manual foot-operated control	
Direct electric control	
Pneumatic control	
Indirect electric control with inside pneumatic support	
Cancelling spring (this symbol always occurs in monostable controlled valves)	

# INDUSTRIAL PNEUMATICS - valves

## Series 70 - manual control



### MAV distribution valve - 90° lever

**Type:** 3/2, 5/2, 5/3  
**Size:** 1/8", 1/4", 1/2"  
**Working press.:** Up to 10 bar  
**Working temp.:** From -10°C up to +60°C  
**Connection:** 1/8", 1/4", 1/2" BSP thread  
**Flow rate:** 550 l/min - 1/8"  
 1100 l/min - 1/4"  
 4600 l/min - 1/2"  
 (input pressure 6 bar and  $\Delta p = 1$  bar)

**Material:** Valve body made of aluminium, spool of nickel-plated aluminium, seal of NBR and cover of Hostaform®.  
**Description:** General purpose manual control distribution valves used mostly to control work of actuators. Can be mounted in line, on the wall, directly to actuators or on manifold base.

MAV	2	3	LE	S	NC
series	size	function	controlling (14)	return (12)	further details
MAV - manual valve	2 - 1/8" 3 - 1/4" 4 - 1/2"	3 - 3/2 5 - 5/2 6 - 5/3	PP - drawer VL - lever LE - lever 90° BRE - pilot-assisted plunger for panel actuators	S - mechanical spring B - bi-stable O - stable for 5/3 D - differential A - pneumatic / mechanical spring	NC - normally closed NO - normally opened OO - 3/2 bi-stable or 5/2 CC - closed outlets OC - deaerated outlets PC - aerated outlets

1/8"		1/4"		1/2"		function and symbol	
code	type	code	type	code	type		
MW-7010000100	MAV 23 LES NC	MW-7020000100	MAV 33 LES NC	MW-7030000100	MAV 43 LES NC	3/2	
MW-7010000200	MAV 23 LEB OO	MW-7020000200	MAV 33 LEB OO	MW-7030000200	MAV 43 LEB OO		
MW-7010000300	MAV 25 LES OO	MW-7020000300	MAV 35 LES OO	MW-7030000300	MAV 45 LES OO	5/2	
MW-7010000400	MAV 25 LEB OO	MW-7020000400	MAV 35 LEB OO	MW-7030000400	MAV 45 LEB OO		
MW-7010000500	MAV 26 LEO CC	MW-7020000500	MAV 36 LEO CC	MW-7030000500	MAV 46 LEO CC	5/3	
MW-7010000600	MAV 26 LEO OC	MW-7020000600	MAV 36 LEO OC	MW-7030000600	MAV 46 LEO OC		
MW-7010000700	MAV 26 LEO PC	MW-7020000700	MAV 36 LEO PC	MW-7030000700	MAV 46 LEO PC		
MW-7010000900	MAV 26 LES OC	MW-7020000900	MAV 36 LES OC	MW-7030000900	MAV 46 LES OC		
MW-7010001000	MAV 26 LES CC	MW-7020001000	MAV 36 LES CC	MW-7030001000	MAV 46 LES CC		
MW-7010001100	MAV 26 LES PC	MW-7020001100	MAV 36 LES PC	MW-7030001100	MAV 46 LES PC		

# INDUSTRIAL PNEUMATICS - valves

## Series 70 - manual control



### MAV distribution valve - front lever

**Type:** 3/2, 5/2, 5/3  
**Size:** 1/8", 1/4"  
**Working press.:** Up to 10 bar  
**Working temp.:** From -10°C up to +60°C  
**Connection:** 1/8", 1/4" BSP thread  
**Flow rate:** 550 l/min - 1/8"  
 1100 l/min - 1/4"  
 (input pressure 6 bar and  $\Delta p = 1$  bar)

**Material:** Valve body made of aluminium, spool of nickel-plated aluminium, seal of NBR and cover of Hostaform®.  
**Description:** General purpose manual distribution valves used mostly to control work of actuators. Can be mounted in line, on the wall, directly to actuators or on manifold base.

MAV	2	3	VL	B	NC
series	size	function	controlling (14)	return (12)	further details
MAV - manual valve	2 - 1/8" 3 - 1/4"	3 - 3/2 5 - 5/2 6 - 5/3 8 - 2x3/2	PP - drawer VL - lever LE - lever 90° BRE - pilot-assisted plunger for panel actuators	S - mechanical spring B - bi-stable O - stable for 5/3 D - differential A - pneumatic / mechanical spring	NC - normally closed NO - normally opened OO - 3/2 bi-stable or 5/2 CC - closed outlets OC - deaerated outlets PC - aerated outlets

1/8"		1/4"		1/2"		function and symbol	
code	type	code	type	code	type		
MW-7010001400	MAV 23 VLB OO	MW-7020001400	MAV 33 VLB OO	-	-	3/2	
MW-7010001700	MAV 25 VLB OO	MW-7020001700	MAV 35 VLB OO	-	-	5/2	
MW-7010001150	MAV 28 VLO OC	-	-	-	-	2x3/2	
MW-7010001160	MAV 28 VLS OC	-	-	-	-		

## Series 70 - solenoid control



### SOV distribution valve - solenoid

**Type:** 3/2, 5/2, 5/3  
**Size:** 1/8", 1/4", 3/8", 1/2"  
**Working press.:** Up to 10 bar  
**Working temp.:** From -10°C up to +60°C  
**Connection:** 1/8", 1/4", 3/8", 1/2" BSP thread  
**Voltage:** 12 V / 24 V / 110 V / 220 V  
**Flow rate:** 550 l/min - 1/8"  
 1100 l/min - 1/4"  
 2150 l/min - 3/8"  
 4600 l/min - 1/2"  
 (input pressure 6 bar and  $\Delta p = 1$  bar)

**Material:** Valve body made of aluminium, spool of nickel-plated aluminium, seal of NBR and cover of Hostaform®.  
**Description:** General purpose valves with electric control (solenoid valves), used mostly to control actuators. Can be mounted in line, to the wall, directly to actuators or on manifold base.

SOV	2	3	SO	S	NC
series	size	function	controlling(14)	return (12)	further details
SOV - solenoid valve	2 - 1/8" 3 - 1/4" C - 3/8" 4 - 1/2"	3 - 3/2 5 - 5/2 6 - 5/3	SO - solenoid SE - solenoid assisted	S - mechanical springs B - bi-stable D - differential P - pneumatic A - pneumatic / mechanical spring	NC - normally closed NO - normally opened OO - 3/2 bi-stable or 5/2 CC - closed outlets OC - deaerated outlets PC - aerated outlets

1/8"		1/4"		function and symbol	
code	type	code	type		
MW-7010020100	SOV 23 SOB OO	MW-7020020100	SOV 33 SOB OO	3/2	
MW-7010020200	SOV 23 SOS NC	MW-7020020200	SOV 33 SOS NC		
MW-7010020300	SOV 23 SEB OO	MW-7020020300	SOV 33 SEB OO		
MW-7010020400	SOV 23 SOS NO	MW-7020020400	SOV 33 SOS NO		
MW-7010020500	SOV 23 SES NC	MW-7020020500	SOV 33 SES NC		
MW-7010021100	SOV 25 SOS OO	MW-7020021100	SOV 35 SOS OO	5/2	
MW-7010021200	SOV 25 SOB OO	MW-7020021200	SOV 35 SOB OO		
MW-7010021300	SOV 25 SOD OO	MW-7020021300	SOV 35 SOD OO		
MW-7010021500	SOV 25 SES OO	MW-7020021500	SOV 35 SES OO		
MW-7010021600	SOV 25 SEB OO	MW-7020021600	SOV 35 SEB OO		
MW-7010022100	SOV 26 SOS CC	MW-7020022100	SOV 36 SOS CC	5/3	
MW-7010022200	SOV 26 SOS OC	MW-7020022200	SOV 36 SOS OC		
MW-7010022300	SOV 26 SOS PC	MW-7020022300	SOV 36 SOS PC		
MW-7010022400	SOV 26 SES CC	MW-7020022400	SOV 36 SES CC		
MW-7010022500	SOV 26 SES OC	MW-7020022500	SOV 36 SES OC		
MW-7010022600	SOV 26 SES PC	MW-7020022600	SOV 36 SES PC		

# INDUSTRIAL PNEUMATICS - valves

## Series 70 - solenoid control - table follow up

3/8"		1/2"		function and symbol	
code	type	code	type		
MW-7040020100	SOV C3 SOB OO	MW-7030020100	SOV 43 SOB OO	3/2	
MW-7040020200	SOV C3 SOS NC	MW-7030020200	SOV 43 SOS NC		
MW-7040020300	SOV C3 SEB OO	MW-7030020300	SOV 43 SEB OO		
MW-7040020400	SOV C3 SOS NO	MW-7030020400	SOV 43 SOS NO		
MW-7040020500	SOV C3 SES NC	MW-7030020500	SOV 43 SES NC		
MW-7040020600	SOV C3 SES NO	-	-		
MW-7040021100	SOV C5 SOS OO	MW-7030021100	SOV 45 SOS OO	5/2	
MW-7040021200	SOV C5 SOB OO	MW-7030021200	SOV 45 SOB OO		
MW-7040021300	SOV C5 SOD OO	MW-7030021300	SOV 45 SOD OO		
MW-7040021500	SOV C5 SES OO	MW-7030021500	SOV 45 SES OO		
MW-7040021600	SOV C5 SEB OO	MW-7030021600	SOV 45 SEB OO		
MW-7040022100	SOV C6 SOS CC	MW-7030022100	SOV 46 SOS CC	5/3	
MW-7040022200	SOV C6 SOS OC	MW-7030022200	SOV 46 SOS OC		
MW-7040022300	SOV C6 SOS PC	MW-7030022300	SOV 46 SOS PC		
MW-7040022400	SOV C6 SES CC	MW-7030022400	SOV 46 SES CC		
MW-7040022500	SOV C6 SES OC	MW-7030022500	SOV 46 SES OC		
MW-7040022600	SOV C6 SES PC	MW-7030022600	SOV 46 SES PC		

# INDUSTRIAL PNEUMATICS - valves

## Series 70 - solenoid control - accessories

### Coils for series 70 valves of 1/8" and 1/4" size

code	type	nominal voltage	power	
			starting	continuous work
MW-W0215000151	22 Ø 8 BA 2 VA, 12 V DC	12 V DC	2 VA	2 VA
MW-W0215000101	22 Ø 8 BA 2 VA, 24 V DC	24 V DC	2 VA	2 VA
MW-W0215000111	22 Ø 8 BA 3 VA, 24 V AC	24 V, 50/60 Hz	4 VA	3 VA
MW-W0215000121	22 Ø 8 BA 3 VA, 110 V AC	110 V, 50/60 Hz	4 VA	3 VA
MW-W0215000131	22 Ø 8 BA 3 VA, 220 V AC	220 V, 50/60 Hz	4 VA	3 VA

### Coils for series 70 valves of 1/8" and 1/2" size

code	type	nominal voltage	power	
			starting	continuous work
MW-W0215000051	22 Ø 8 5 VA, 12 V DC	12 V DC	5 VA	5 VA
MW-W0215000001	22 Ø 8 5 VA, 24 V DC	24 V DC	5 VA	5 VA
MW-W0215000011	22 Ø 8 5 VA, 24 V AC	24 V, 50/60 Hz	8 VA	5 VA
MW-W0215000021	22 Ø 8 5 VA, 110 V AC	110 V, 50/60 Hz	8 VA	5 VA
MW-W0215000031	22 Ø 8 5 VA, 220 V AC	220 V, 50/60 Hz	8 VA	5 VA

### Electric plug 22 mm

code	type	Ø cable	colour
MW-W0970510011	standard	PG9	black
MW-W0970510012	LED 24 V	PG9	transparent
MW-W0970510013	LED 110 V	PG9	transparent
MW-W0970510014	LED 220 V	PG9	transparent
MW-W0970510015	LED + VDR 24 V	PG9	transparent
MW-W0970510016	LED + VDR 110 V	PG9	transparent
MW-W0970510017	LED + VDR 220 V	PG9	transparent

VDR - circuit protection.

## Series 70 - pneumatic control



### Distribution valves PNV

**Type:** 3/2, 5/2, 5/3  
**Size:** 1/8", 1/4", 3/8", 1/2"  
**Working press.:** Up to 10 bar  
**Min. press. control:** 2.5 bar (monostable)  
                                   1 bar (bistable)  
**Working temp.:** From -10°C up to +60°C  
**Connection:** 1/8", 1/4", 3/8", 1/2" BSP female thread  
**Flow rate:** 550 l/min - 1/8"  
                   1100 l/min - 1/4"  
                   2150 l/min - 3/8"  
                   4600 l/min - 1/2"  
                   (input pressure 6 bar and  $\Delta p = 1$  bar)

**Material:** Valve body made of aluminium, spool of nickel-plated aluminium, seal of NBR and cover of Hostaform®.  
**Description:** General purpose pneumatic distribution valves most often used to control actuators. Can be mounted in line, on the wall, directly to actuators or on manifold base.

PNV	2	3	PN	S	NC
series	size	function	controlling (14)	return (12)	further details
PNV - pneumatic valve	2 - 1/8" 3 - 1/4" C - 3/8" 4 - 1/2"	3 - 3/2 5 - 5/2 6 - 5/3	PN- pneumatic	S - mechanical spring B - bi-stable D - differential O - stable for 5/3 A - pneumatic / mechanical spring	NC - normally closed NO - normally opened OO - 3/2 bi-stable or 5/2 CC - closed outlets OC - deaerated outlets PC - aerated outlets

1/8"		1/4"		function and symbol	
code	type	code	type		
MW-7010010100	PNV 23 PNB OO	MW-7020010100	PNV 33 PNB OO	3/2	
MW-7010010200	PNV 23 PNS NC	MW-7020010200	PNV 33 PNS NC		
MW-7010010400	PNV 23 PNS NO	MW-7020010400	PNV 33 PNS NO		
MW-7010011100	PNV 25 PNS OO	MW-7020011100	PNV 35 PNS OO	5/2	
MW-7010011200	PNV 25 PNB OO	MW-7020011200	PNV 35 PNB OO		
MW-7010011300	PNV 25 PND OO	MW-7020011300	PNV 35 PND OO		
MW-7010012100	PNV 26 PNS CC	MW-7020012100	PNV 36 PNS CC	5/3	
MW-7010012200	PNV 26 PNS OC	MW-7020012200	PNV 36 PNS OC		
MW-7010012300	PNV 26 PNS PC	MW-7020012300	PNV 36 PNS PC		



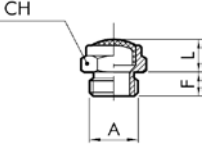
# INDUSTRIAL PNEUMATICS - valves

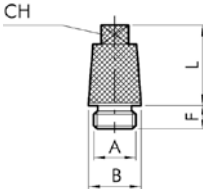
## Series 70 - pneumatic control - table follow up

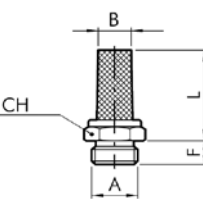
3/8"		1/2"		function and symbol	
code	type	code	type		
MW-7040010100	PNV C3 PNB OO	MW-7030010100	PNV 43 PNB OO	3/2	
MW-7040010200	PNV C3 PNS NC	MW-7030010200	PNV 43 PNS NC		
MW-7040010400	PNV C3 PNS NO	MW-7030010400	PNV 43 PNS NO		
MW-7040011100	PNV C5 PNS OO	MW-7030011100	PNV 45 PNS OO	5/2	
MW-7040011200	PNV C5 PNB OO	MW-7030011200	PNV 45 PNB OO		
MW-7040011300	PNV C5 PND OO	MW-7030011300	PNV 45 PND OO		
MW-7040012100	PNV C6 PNS CC	MW-7030012100	PNV 46 PNS CC	5/3	
MW-7040012200	PNV C6 PNS OC	MW-7030012200	PNV 46 PNS OC		
MW-7040012300	PNV C6 PNS PC	MW-7030012300	PNV 46 PNS PC		

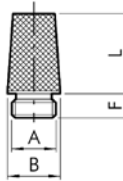
# INDUSTRIAL PNEUMATICS - valves

## Accessories - silencers

	code	A	F	L	CH	description  MW SFE silencer. Material: nickel-plated brass, stainless steel wire. Working press.: up to 12 bar. Working temp.: from -10°C up to +80°C.
	MW-W0970530051	M5	3.7	4.7	8	
	MW-W0970530052	1/8"	6.2	8.2	13	
	MW-W0970530053	1/4"	7.7	11.3	16	
	MW-W0970530054	3/8"	8	11.5	19	
	MW-W0970530055	1/2"	10.3	13	24	
	MW-W0970530056	3/4"	10	15	30	
	MW-W0970530057	1"	12	18	36	

	code	A	B	F	L	CH	description  MW SCQ silencer for booster. Material: nickel-plated brass, sintered nickel-plated bronze. Working press.: up to 12 bar. Working temp.: from -10°C up to +80°C.
	MW-W0970530012	1/8"	12	6	15	7	
	MW-W0970530013	1/4"	15	7.5	19	8	
	MW-W0970530014	3/8"	19	8.5	29.2	10	
	MW-W0970530015	1/2"	23	9	31.5	14	
	MW-W0970530016	3/4"	29	10	41.5	17	
	MW-W0970530017	1"	36	12	51.2	23	

	code	A	B	F	L	CH	description  MW SE silencer. Material: nickel-plated brass, sintered nickel-plated bronze. Working press.: up to 12 bar. Working temp.: from -10°C up to +80°C.
	MW-W0970530021	M5	4	4	13	8	
	MW-W0970530020	M7	5	5	21	10	
	MW-W0970530022	1/8"	7	6	21	13	
	MW-W0970530023	1/4"	8.5	8	23.5	16	
	MW-W0970530024	3/8"	11	8	33	19	
	MW-W0970530025	1/2"	15	10	37	24	
	MW-W0970530026	3/4"	21.5	10	43.5	30	
	MW-W0970530027	1"	27	11.5	56	36	

	code	A	B	F	L	description  MW SC silencer. Material: nickel-plated brass, sintered nickel-plated bronze. Working press.: up to 12 bar. Working temp.: from -10°C up to +80°C.
	MW-W0970530001	M5	6	4.5	10	
	MW-W0970530002	1/8"	12	6	15	
	MW-W0970530003	1/4"	15	6.7	19	
	MW-W0970530004	3/8"	19	8.5	28.5	
	MW-W0970530005	1/2"	23	8.7	33	
	MW-W0970530006	3/4"	29	11	40.5	
	MW-W0970530007	1"	36	11.5	50.5	

## Throttle and throttle check valves

Throttle and throttle check valves are used in pneumatic systems to control the flow rate of compressed air stream and its direction.

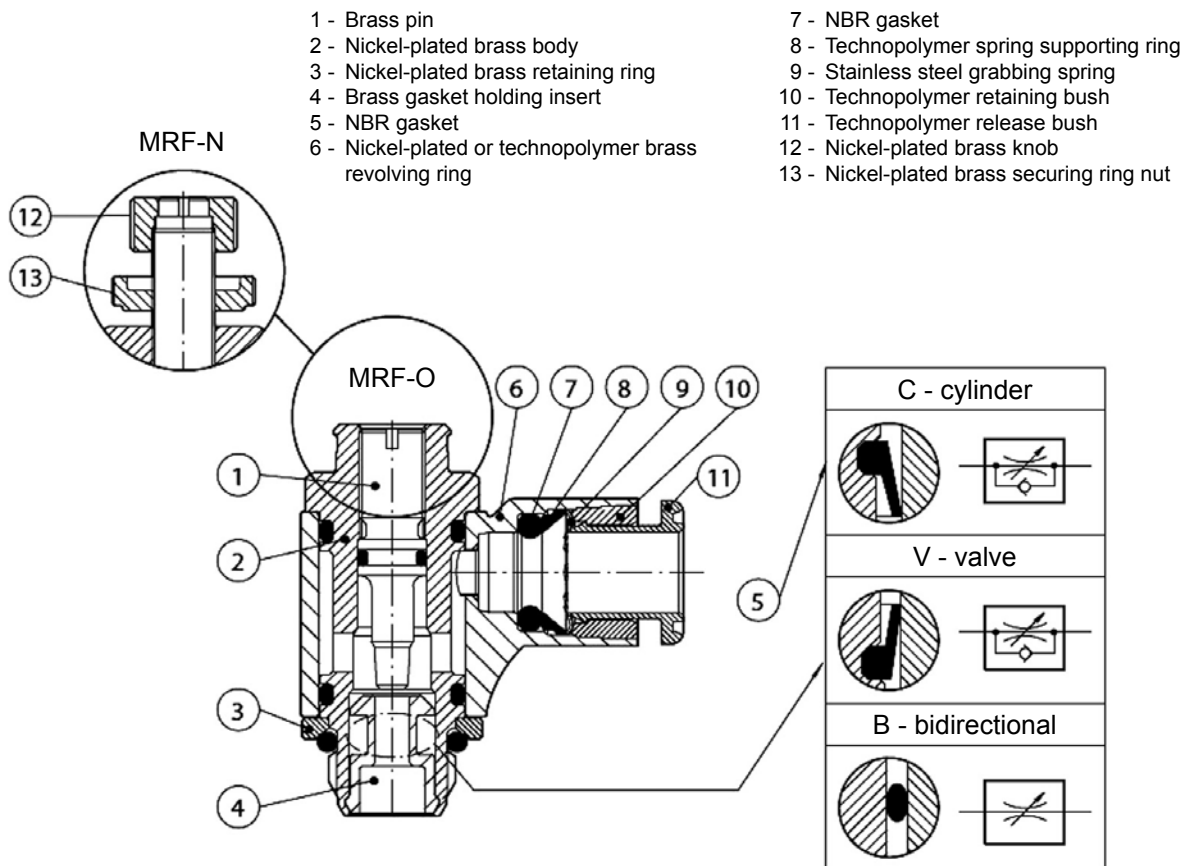


### Valves MRF-N, MRF-O type

**Size:** M5, 1/8", 1/4", 3/8", 1/2"  
**Working press.:** Up to 10 bar  
**Working temp.:** From -10°C up to +50°C (plastic)  
 From -10°C up to +70°C (brass)  
**Adjustment:** Manual or with screwdriver

MRF valves are designed for continuous speed control of pneumatic actuators. Throttle check valves can be mounted directly in the connection port of an actuator (letter C at the end of the code) or distribution valve (letter V at the end of the code). In both cases, the seal ensures a full flow rate during supply and flow rate control during deaeration. Throttle valves (letter B at the end of the code) can be used for the control of the flow rate in both directions - during aeration and deaeration.

### Construction of throttle and throttle check valves MRF-N and MRF-O



# INDUSTRIAL PNEUMATICS - valves

## Throttle and throttle check valves

MRF	N	M	C	4	M5
element	type	body	function	plug connection	thread connection
MRF - valve	N - with knob and ring nut O - flash pin	M - nickel-plated brass T - technopolymer	C - for cylinder V - for valve B - bidirectional	4 - Ø 4 5 - Ø 5 6 - Ø 6 8 - Ø 8 10 - Ø 10 12 - Ø 12	M5 - M5 1/8 - G 1/8" 1/4 - G 1/4" 3/8 - G 3/8" 1/2 - G 1/2"

connection / hose I.D.		MRF COMPACT "O"				MRF COMPACT "N"			
		brass		technopolymer		brass		technopolymer	
		code	type	code	type	code	type	code	type
M5	4	MW-9001001C	MRF O M C 4 M5	MW-9011001C	MRF O T C 4 M5	MW-9031001C	MRF N M C 4 M5	MW-9021001C	MRF N T C 4 M5
		MW-9001110V	MRF O M V 4 M5	MW-9011110V	MRF O T V 4 M5	MW-9031101V	MRF N M V 4 M5	MW-9021101V	MRF N T V 4 M5
		MW-9001601B	MRF O M B 4 M5	MW-9011601B	MRF O T B 4 M5	MW-9031201B	MRF N M B 4 M5	MW-9021201B	MRF N T B 4 M5
	5	MW-9001002C	MRF O M C 5 M5	-	-	MW-9031003C	MRF N M C 5 M5	-	-
		MW-9001113V	MRF O M V 5 M5	-	-	MW-9031103V	MRF N M V 5 M5	-	-
		MW-9001603B	MRF O M B 5 M5	-	-	MW-9031203B	MRF N M B 5 M5	-	-
	6	MW-9001007C	MRF O M C 6 M5	MW-9011007C	MRF O T C 6 M5	MW-9031005C	MRF N M C 6 M5	MW-9021005C	MRF N T C 6 M5
		MW-9001105V	MRF O M V 6 M5	MW-9011105V	MRF O T V 6 M5	MW-9031105V	MRF N M V 6 M5	MW-9021105V	MRF N T V 6 M5
		MW-9001612B	MRF O M B 6 M5	MW-9011612B	MRF O T B 6 M5	MW-9031205B	MRF N M B 6 M5	MW-9021205B	MRF N T B 6 M5
1/8"	4	MW-9001011C	MRF O M C 4 1/8	MW-9011011C	MRF O T C 4 1/8	MW-9031002C	MRF N M C 4 1/8	MW-9021002C	MRF N T C 4 1/8
		MW-9001111V	MRF O M V 4 1/8	MW-9011111V	MRF O T V 4 1/8	MW-9031102V	MRF N M V 4 1/8	MW-9021102V	MRF N T V 4 1/8
		MW-9001602B	MRF O M B 4 1/8	MW-9011602B	MRF O T B 4 1/8	MW-9031202B	MRF N M B 4 1/8	MW-9021202B	MRF N T B 4 1/8
	5	MW-9001012C	MRF O M C 5 1/8	-	-	MW-9031004C	MRF N M C 5 1/8	-	-
		MW-9001112V	MRF O M V 5 1/8	-	-	MW-9031104V	MRF N M V 5 1/8	-	-
		MW-9001604B	MRF O M B 5 1/8	-	-	MW-9031204B	MRF N M B 5 1/8	-	-
	6	MW-9001003C	MRF O M C 6 1/8	MW-9011003C	MRF O T C 6 1/8	MW-9031006C	MRF N M C 6 1/8	MW-9021006C	MRF N T C 6 1/8
		MW-9001101V	MRF O M V 6 1/8	MW-9011101V	MRF O T V 6 1/8	MW-9031106V	MRF N M V 6 1/8	MW-9021106V	MRF N T V 6 1/8
		MW-9001605B	MRF O M B 6 1/8	MW-9011605B	MRF O T B 6 1/8	MW-9031206B	MRF N M B 6 1/8	MW-9021206B	MRF N T B 6 1/8
	8	MW-9001005C	MRF O M C 8 1/8	MW-9011005C	MRF O T C 8 1/8	MW-9031008C	MRF N M C 8 1/8	MW-9021008C	MRF N T C 8 1/8
		MW-9001103V	MRF O M V 8 1/8	MW-9011103V	MRF O T V 8 1/8	MW-9031108V	MRF N M V 8 1/8	MW-9021108V	MRF N T V 8 1/8
		MW-9001607B	MRF O M B 8 1/8	MW-9011607B	MRF O T B 8 1/8	MW-9031208B	MRF N M B 8 1/8	MW-9021208B	MRF N T B 8 1/8
1/4"	6	MW-9001004C	MRF O M C 6 1/4	MW-9011004C	MRF O T C 6 1/4	MW-9031007C	MRF N M C 6 1/4	MW-9021007C	MRF N T C 6 1/4
		MW-9001102V	MRF O M V 6 1/4	MW-9011102V	MRF O T V 6 1/4	MW-9031107V	MRF N M V 6 1/4	MW-9021107V	MRF N T V 6 1/4
		MW-9001606B	MRF O M B 6 1/4	MW-9011606B	MRF O T B 6 1/4	MW-9031207B	MRF N M B 6 1/4	MW-9021207B	MRF N T B 6 1/4
	8	MW-9001006C	MRF O M C 8 1/4	MW-9011006C	MRF O T C 8 1/4	MW-9031009C	MRF N M C 8 1/4	MW-9021009C	MRF N T C 8 1/4
		MW-9001104V	MRF O M V 8 1/4	MW-9011104V	MRF O T V 8 1/4	MW-9031109V	MRF N M V 8 1/4	MW-9021109V	MRF N T V 8 1/4
		MW-9001608B	MRF O M B 8 1/4	MW-9011608B	MRF O T B 8 1/4	MW-9031209B	MRF N M B 8 1/4	MW-9021209B	MRF N T B 8 1/4
	10	MW-9001008C	MRF O M C 10 1/4	MW-9011008C	MRF O T C 10 1/4	MW-9031011C	MRF N M C 10 1/4	MW-9021011C	MRF N T C 10 1/4
		MW-9001106V	MRF O M V 10 1/4	MW-9011106V	MRF O T V 10 1/4	MW-9031111V	MRF N M V 10 1/4	MW-9021111V	MRF N T V 10 1/4
		MW-9001609B	MRF O M B 10 1/4	MW-9011609B	MRF O T B 10 1/4	MW-9031211B	MRF N M B 10 1/4	MW-9021211B	MRF N T B 10 1/4
	12	MW-9001014C	MRF O M C 12 1/4	MW-9011014C	MRF O T C 12 1/4	MW-9031014C	MRF N M C 12 1/4	MW-9021014C	MRF N T C 12 1/4
		MW-9001123V	MRF O M V 12 1/4	MW-9011123V	MRF O T V 12 1/4	MW-9031114V	MRF N M V 12 1/4	MW-9021114V	MRF N T V 12 1/4
		MW-9001623B	MRF O M B 12 1/4	MW-9011623B	MRF O T B 12 1/4	MW-9031214B	MRF N M B 12 1/4	MW-9021214B	MRF N T B 12 1/4
3/8"	10	MW-9001009C	MRF O M C 10 3/8	MW-9011009C	MRF O T C 10 3/8	MW-9031012C	MRF N M C 10 3/8	MW-9021012C	MRF N T C 10 3/8
		MW-9001114V	MRF O M V 10 3/8	MW-9011114V	MRF O T V 10 3/8	MW-9031112V	MRF N M V 10 3/8	MW-9021112V	MRF N T V 10 3/8
		MW-9001610B	MRF O M B 10 3/8	MW-9011610B	MRF O T B 10 3/8	MW-9031212B	MRF N M B 10 3/8	MW-9021212B	MRF N T B 10 3/8
	12	MW-9001015C	MRF O M C 12 3/8	MW-9011015C	MRF O T C 12 3/8	MW-9031015C	MRF N M C 12 3/8	MW-9021015C	MRF N T C 12 3/8
		MW-9001124V	MRF O M V 12 3/8	MW-9011124V	MRF O T V 12 3/8	MW-9031115V	MRF N M V 12 3/8	MW-9021115V	MRF N T V 12 3/8
		MW-9001624B	MRF O M B 12 3/8	MW-9011624B	MRF O T B 12 3/8	MW-9031215B	MRF N M B 12 3/8	MW-9021215B	MRF N T B 12 3/8
1/2"	12	MW-9001016C	MRF O M C 12 1/2	MW-9011016C	MRF O T C 12 1/2	MW-9031016C	MRF N M C 12 1/2	MW-9021016C	MRF N T C 12 1/2
		MW-9001125V	MRF O M V 12 1/2	MW-9011125V	MRF O T V 12 1/2	MW-9031116V	MRF N M V 12 1/2	MW-9021116V	MRF N T V 12 1/2
		MW-9001625B	MRF O M B 12 1/2	MW-9011625B	MRF O T B 12 1/2	MW-9031216B	MRF N M B 12 1/2	MW-9021216B	MRF N T B 12 1/2

# INDUSTRIAL PNEUMATICS - valves



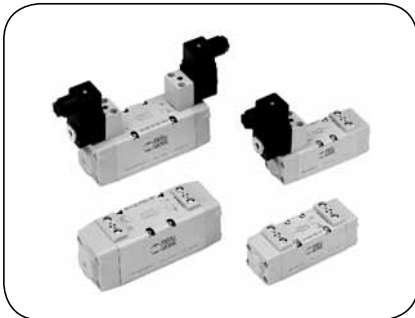
## Minivalves - VME 1 series

- Type: 3/2, NC, NO, monostable
- Version: valves with fittings
- Control: mechanical or manual
- Nominal flow rate (at 6 bar  $\Delta p = 1$  bar): 60 l/min
- Connection: push-in fittings  $\varnothing 4$
- Low actuation force: 8 N
- Working pressure range: 2 ÷ 10 bar
- Working temperature range: -10°C up to +60°C
- Operation with unlubricated compressed air also possible



## Pedal operated valves - PEV series

- Type: 5/2, mono and bi-stable
- Version: valves with fittings
- Control: pedal operated
- Nominal flow rate (at 6 bar  $\Delta p = 1$  bar): 650 l/min
- Connection: G 1/4"
- Working pressure range: 2 ÷ 10 bar
- Working temperature range: -10°C up to +60°C
- Operation with unlubricated compressed air also possible



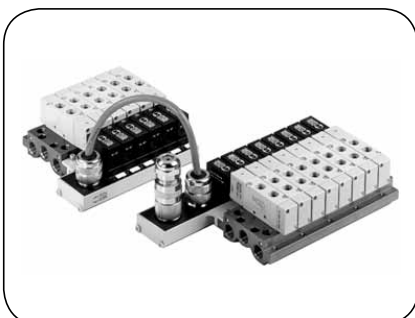
## Distribution valves according to ISO 5599/1 - IPV-ISV series

- Type: 5/2, 5/3, mono and bi-stable
- Version: for board assembly with normalised connection surface
- Control: electric, pneumatic, manually supported
- Nominal flow rate (at 6 bar  $\Delta p = 1$  bar): 1100 ÷ 2700 l/min (depending on size)
- Size: ISO 1, ISO 2
- Working pressure range: vacuum ÷ 10 bar (depending on type)
- Working temperature range: -10°C up to +60°C



## Distribution valves - MACH 11, 16, 18 series

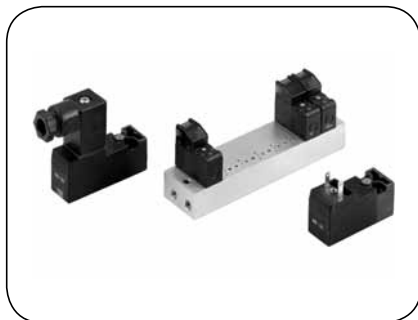
- Type: 5/2, 5/3, mono and bi-stable
- Version: for board assembly with normalised connection surface
- Control: electric, pneumatic, manually supported
- Nominal flow rate (at 6 bar  $\Delta p = 1$  bar): 470 l/min
- Electrical connection: according to DIN 43650, shape C
- Working pressure range: vacuum ÷ 10 bar (depending on type)
- Working temperature range: -10°C up to +60°C
- Operation with unlubricated compressed air also possible



## Valves island for MACH 16 series

- Type: for MACH 16 valves with electric control
- Versions: with board for mono or bi-stable valves, optional connection of additional board for monostable valves
- Max. number of coils: 16
- Operation voltage: 24 V DC, 24 V AC
- Valve actuation indicator: LED;
- Internal protection: IP 65
- Optional island reconfiguration (board for bi-stable valves exchanged for board for monostable valves)

# INDUSTRIAL PNEUMATICS - valves



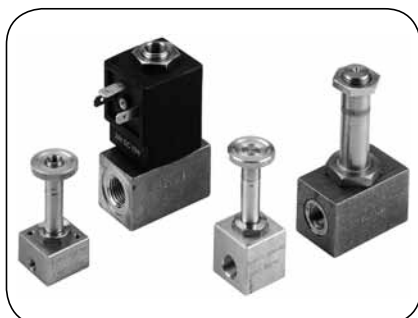
## Distribution valves - PIV.P 10 mm, PIV.M 15 mm series

- Type: 3/2, NC, NO, monostable
- Version: for board assembly
- Control: electric, direct
- Service life: more than 50 million cycles
- Connection: M3, M5 (depending on size)
- Internal protection: IP60
- Maximum operation frequency: 30 Hz
- Working temperature range: +5°C up to +50°C
- Operation with unlubricated compressed air also possible



## Distribution valve - PIV.I, PIV.T, PIV.B series

- Type: 2/2, 3/2, NC, NO, monostable
- Version: for board assembly
- Control: electric, direct
- Service life: 25 million cycles
- Power consumption: 2 ÷ 16 W (depending on series)
- Internal protection: IP65
- Max. operation frequency: 15 to 30 Hz (depending on series)
- Used when high operation frequency and short response time are required
- Operation with unlubricated compressed air also possible



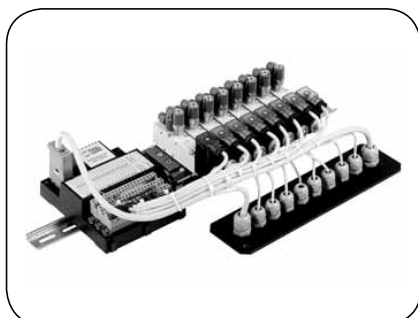
## Distribution valve - PIV series

- Type: 2/2, 3/2, NC, NO, monostable,
- Version: valves with fittings
- Control: electric, direct
- Service life: 25 million cycles (depending on series)
- Power consumption: 2 ÷ 16 W (depending on series)
- Internal protection: IP65
- Maximum operation frequency: 15 ÷ 30 Hz (depending on series)
- Used when high operation frequency and short response time are required
- Operation with unlubricated compressed air also possible



## Distribution valve according to CNOMO 060580

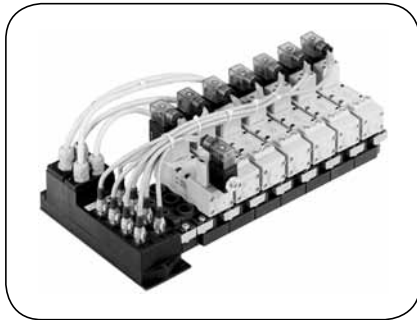
- Type: 3/2, NC, monostable,
- Versions: for board assembly, mono or bi-stable manual actuation
- Control: electric, direct
- Nominal flow rate (at 6 bar  $\Delta p = 1$  bar): 40 l/min
- Internal protection: IP65
- Operational voltage: 24 V DC, 24 V, 110 V, 220 V AC
- Operation with unlubricated compressed air also possible



## Modular slave IP 20

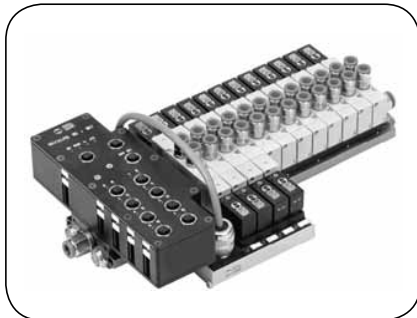
- Type: PROFIBUS-DP, INTERBUS-S
- Versions: 16 inputs / 32 inputs, 16 inputs, 16 inputs + 16 outputs
- Operational voltage: 24 V DC (18 ÷ 30 V), around 100 mA
- Internal protection: IP20
- Working temperature range: 0°C up to +55°C

# INDUSTRIAL PNEUMATICS - valves



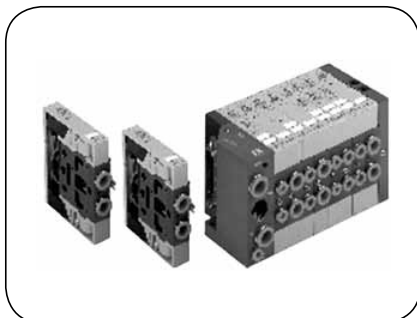
## Modular slave IP 65

- Type: PROFIBUS-DP, INTERBUS-S
- Versions: 8 outputs, 16 inputs, 8 inputs + 4 outputs
- Operational voltage: 24 V DC (18 ÷ 30 V), around 100 mA
- Internal protection: IP65
- Working temperature range: from 0 up to +55°C



## Modular slave IP 65 for MACH 16 valves

- Type: PROFIBUS-DP, INTERBUS-S
- Versions: 8 outputs, 16 inputs, 8 inputs + 4 outputs
- Operational voltage: 24 V DC (18 ÷ 30 V), around 100 mA
- Internal protection: IP65
- Working temperature range: from 0 up to +55°C



## MULTIMACH valves island

- Valve connection: connection ports 2 and 4, Ø 4, 6, 8 mm threaded exhaust outlet port 3/8 or fitting Ø 8
- Working temperature range: 0°C up to +55°C
- Nominal flow rate (at 6 bar  $\Delta p = 1$  bar): 150 - 400 - 800 l/min (depending on size)
- Coil operational voltage: 24 V DC
- Power consumption: 1.2 W
- Electrical connection: 9 or 25 pin plug connector
- Internal protection: IP51
- Valves with three different values of a nominal flow rate can be mounted together



## In-line flow micro regulators - RFL series

- Type: throttle check, throttle valve
- Connection: M5, 1/8", 1/4", 3/8", 1/2"
- Max. working pressure: 10 bar
- Max. working temperature: +70°C



## Quick drain valves - VSR series

- Connection: 1/8", 1/4", 1/2"
- Nominal flow rate (at 6 bar, P>A): 900 ÷ 3500 l/min
- Nominal flow rate (at 6 bar, A>R): 1700 ÷ 7800 l/min
- Max. working pressure: 12 bar
- Min. working pressure: 0.5 bar
- Max. working temperature: +80°C
- (P - supply connection, A - working, R - venting)



## Check and controlled throttle check valves - STP series

- Type: controlled check valve, controlled throttle check valve
- Connection: 1/8", 1/4", 3/8", 1/2"
- Pilot wire outside diameter: 4 mm
- Supply pipe outside diameter: 6 - 8 - 10 - 12 mm
- Nominal flow rate (at 6 bar): 250 ÷ 1700 l/min
- Working pressure range: 0.5 ÷ 10 bar
- Working temperature range: from -10°C up to 70°C
- Operation with unlubricated compressed air also possible



## Start-up valves - VCS series

- Type: start-up valve
- Connection: 1/8", 1/4", 3/8", 1/2"
- Working pressure range: 0 ÷ 10 bar
- Working temperature range: from -10°C up to +80°C
- Operation with unlubricated compressed air also possible



## Shuttle valves - VOR series

- Type: circuit selector
- Connection: 1/8", 1/4"
- Nominal diameter: 2.5 mm
- Working pressure range: 2 ÷ 10 bar
- Working temperature range: from -10°C up to +80°C
- Operation with unlubricated compressed air also possible



## Check valves - VNR series

- Type: check valve
- Connection: 1/8", 1/4"
- Nominal diameters: 5, 2.7 mm
- Working pressure range: 2 ÷ 10 bar
- Working temperature range: from -10°C up to +70°C
- Valve opening pressure: 0.05 bar
- Operation with unlubricated compressed air also possible



## Logic valve

- Type: logic valve
- Versions: basic logic functions: OR, AND, YES, NOT, MEMORY
- Connection: push-in fitting Ø 4 mm
- Nominal diameter: 2.7 mm
- Working pressure range: 0 ÷ 8 bar (depends on version)
- Working temperature range: from -10 up to +60°C
- Nominal flow rate (at 6 bar  $\Delta p=1$  bar): 100 l/min
- Operation with unlubricated compressed air also possible



# INDUSTRIAL PNEUMATICS - air treatment units

Atmospheric air is polluted with gases, vapours and molecules of various chemical compounds as well as with swirling dust of various shape, structure and density. The composition and concentration of pollutants in the atmospheric air is dependent on the location and time of the year. All of these pollutions enter pneumatic systems enriched with impurities brought during compression, unless they are removed from the air before and after compression.

In pneumatics, compressed air is prepared in special devices (air preparation units - FRL) which:

- remove impurities from air (F-filter),
- regulate pressure to the required level (R-regulator),
- lubricate the air (L-lubricator).

In addition, a shut-off start-up valve is usually installed before FRL units whereas a soft-start valve after FRL units (before a final device).

Filtered air should not contain:

- water in the form of drops - water vapours are allowable as long as the dew-point (the condensation temperature of the air at a given pressure and humidity) is about  $5 \div 10^{\circ}\text{C}$  below the lowest temperature in the installation, and the relative humidity at the lowest working temperature does not exceed 80% (relative humidity is expressed in %, 0-dry air without water vapour, 100% saturated with water vapour - its cooling causes immediate condensation),
- oil and other fluids in the form of drops,
- mechanical pollution greater than  $50\text{ }\mu\text{m}$ .

## Filters - selection and maintenance.

- A filter is a device that does not remove water in the form of steam from the air (for this purpose use a refrigeration or adsorption dryer which transmits air through a tank with adsorbent which captures the moisture).
- A filter insert should be replaced every half a year on average (depending on the extent of air pollution).
- A filter with an insert of  $5\text{ }\mu\text{m}$  filtration degree should be installed before an accurate filter (depurator). It removes biggest particles so that sudden clogging of accurate filters is avoided.

## Regulating valves (regulators) - selection and maintenance

- The range of regulating valve output should be carefully selected - the required working pressure must be within the range but as close to the maximum valve output pressure as possible. Then the regulator operates closer to its set point value and has smaller hysteresis.
- Care must be taken to provide only clean air to the regulating valve inlet. Possible impurities can cause problems with closing of the valve and continuous air venting through secondary venting.
- Some regulating valves are equipped with an air vent working continuously, which is not its disadvantage (it allows to maintain the required value of output pressure more precisely).
- the required pressure in majority of regulators should be set "from the bottom".

## Lubricators - selection and maintenance

- Most of pneumatic actuators (e.g. all drives-servo motors MW-...) can work without lubrication (without an external lubricator). If a lubricator is used, its tank must be refilled with oil periodically because oil mist rinses factory-applied grease off.
- At assembly and start-up of the lubricator, a needle which adjusts the amount of the oil mist must be closed and then opened to the required dosage of oil.
- The distance between the lubricator and actuators should not exceed 7 meters.

device	main parameters	common parameters
filter	degree of filtration	<ul style="list-style-type: none"> <li>- size of connection ports</li> <li>- nominal flow</li> <li>- working temp.</li> </ul>
	type of condensate drain	
regulator (regulating valve)	output pressure range	
lubricator	tank volume	
	way of oil refilling	
filter-regulator	degree of filtration	
	type of condensate drain	
	output pressure range	
shut-off start-up valve	type of control signal	
soft-start valve	type of control signal	

## EWO series



### Panel regulator

<b>Material:</b>	Zinc and aluminium alloy
<b>Size:</b>	3/8"
<b>Inlet pressure:</b>	Up to 25 bar
<b>Working temp.:</b>	From -10°C up to +90°C
<b>Connection:</b>	3/8" BSP thread
<b>Flow rate:</b>	1000 l/min (inlet pressure 8 bar and $\Delta p = 1$ bar)

Membrane type regulating valve with a pressure gauge integrated into a handwheel, perfect for panel mounting. Equipped with an air venting system. Highly accurate in maintaining output pressure. A set for panel mounting available (EW-367K33).

code	outlet pressure range [bar]
EW-367331	0.5 ÷ 3
EW-367332	0.5 ÷ 6
EW-367333	0.5 ÷ 10
EW-367334	0.5 ÷ 16



### High pressure regulator

<b>Material:</b>	Brass
<b>Size:</b>	DN12, DN20
<b>Inlet pressure:</b>	Up to 60 bar
<b>Working temp.:</b>	From -10°C up to +90°C
<b>Connection:</b>	1/4", 3/8", 1" BSP thread
<b>Flow rate:</b>	1400 l/min - BG I 5000 l/min - BG II (inlet pressure 20 bar and $\Delta p = 4$ bar)

High pressure piston-type regulating valve. Available in two versions BG I (DN12) and BG II (DN20). Equipped with an air venting system. Highly accurate in maintaining output pressure. Robust brass housing. As a standard a pressure gauge Ø 63 mm is mounted (version without a pressure gauge available).

code	DN [mm]	connection	outlet pressure range [bar]
EW-302323	12	1/4"	0.5 ÷ 12
EW-302324			1 ÷ 20
EW-302325			2 ÷ 35
EW-302326			3 ÷ 50
EW-302333	12	3/8"	0.5 ÷ 12
EW-302334			1 ÷ 20
EW-302335			2 ÷ 35
EW-302336			3 ÷ 50
EW-302393	20	1"	0.5 ÷ 12
EW-302394			1 ÷ 20
EW-302395			2 ÷ 35
EW-302396			3 ÷ 50

## BIT series

Main advantages of BIT air preparation system are reduced dimensions, long service life and excellent quality-to-price ratio. Especially recommended for de-centralized compressed air systems or near the final actuators.



### FIL filter

**Size:** 1/8" 1/4"  
**Degree of filtration:** 5 µm, 20 µm, 50 µm  
**Inlet pressure:** Up to 13 bar  
**Working temp.:** Up to +50°C  
**Connection:** 1/8", 1/4" BSP female thread  
**Condensate drain:** Manual / automatic (RMSA)  
 Automatic drain (SAC)  
**Flow rate:** 1200 l/min - 1/8"  
 1200 l/min - 1/4"  
 (input pressure 6 bar and  $\Delta p = 1$  bar)

FIL	BIT	1/8	5	RMSA
element	series	connection	degree of filtration	condensate drain
FIL - filtr	BIT	1/8 - 1/8" 1/4 - 1/4"	5 - 5 µm 20 - 20 µm 50 - 50 µm	RMSA - manual/ semi-automatic SAC - automatic, using pressure drop

1/8"		1/4"		degree of filtration [µm]	condensate drain
code	type	code	type		
MW-5101001	FIL BIT 1/8 5 RMSA	MW-5201001	FIL BIT 1/4 5 RMSA	5	RMSA
MW-5101002	FIL BIT 1/8 20 RMSA	MW-5201002	FIL BIT 1/4 20 RMSA	20	
MW-5101003	FIL BIT 1/8 50 RMSA	MW-5201003	FIL BIT 1/4 50 RMSA	50	
MW-5101004	FIL BIT 1/8 5 SAC	MW-5201004	FIL BIT 1/4 5 SAC	5	SAC
MW-5101005	FIL BIT 1/8 20 SAC	MW-5201005	FIL BIT 1/4 20 SAC	20	
MW-5101006	FIL BIT 1/8 50 SAC	MW-5201006	FIL BIT 1/4 50 SAC	50	

### Condensate draining, replacing filter inserts - service tips

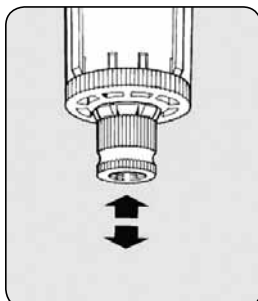


fig. 1a

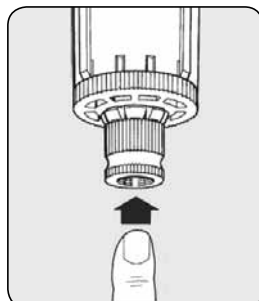


fig. 1b

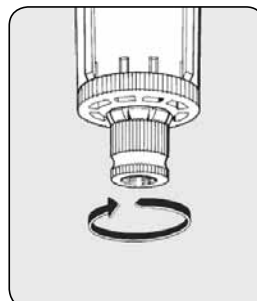


fig. 1c



fig. 1d

When the handwheel is in the centre position, the drain valve is semi-automatic. It opens when the tank is vented and closes after tank is pressurised (fig. 1a). To drain the pressurised tank, press the drain valve (fig. 1b). Clock-wise turn of the handwheel closes the drain valve regardless of the tank pressure (fig. 1c). To clean or replace filter inserts, unscrew the separator screen of the centrifuge (fig. 1d). To disassemble the tank use MW-9170601 key.

## BIT series



### MR regulator

**Size:** 1/8", 1/4"  
**Outlet press. range:** 0÷2, 0÷4, 0÷8, 0÷12 bar  
**Inlet pressure:** Up to 13 bar  
**Working temp.:** Up to +50°C  
**Connection:** 1/8", 1/4" BSP female thread  
**Pressure gauge port:** 1/8" BSP female thread  
**Flow rate:** 600 l/min - 1/8"  
 600 l/min - 1/4"  
 (input pressure 6 bar and  $\Delta p = 1$  bar)

**MR**

**BIT**

**FC**

**1/8**

**02**

element	series	version	connection	outlet pressure range
MR - regulating valve MRA - water regulating valve	BIT	FC SR	1/8 - 1/8" 1/4 - 1/4"	02 - 0÷2 bar 04 - 0÷4 bar 08 - 0÷8 bar 012 - 0÷12 bar

- MR BIT - standard version for pressure adjustment of compressed air in pneumatic system  
 MR BIT FC - controlled relief to allow greater accuracy in regulation by means of slight, continuous air relief.  
 MR BIT SR - relieves the downstream circuit quickly when the upstream pressure drops. Mount the SR regulator between the start-up valve and the final application.  
 MRA BIT - regulates pressure in water circuits; without secondary venting.

1/8"		1/4"		outlet pressure range [bar]	version
code	type	code	type		
MW-5102001	MR BIT SR 1/8 02	MW-5202001	MR BIT SR 1/4 02	0 ÷ 2	MR BIT SR
MW-5102002	MR BIT SR 1/8 04	MW-5202002	MR BIT SR 1/4 04	0 ÷ 4	
MW-5102003	MR BIT SR 1/8 08	MW-5202003	MR BIT SR 1/4 08	0 ÷ 8	
MW-5102004	MR BIT SR 1/8 012	MW-5202004	MR BIT SR 1/4 012	0 ÷ 12	
MW-5107001	MR BIT 1/8 02	MW-5207001	MR BIT 1/4 02	0 ÷ 2	MR BIT
MW-5107002	MR BIT 1/8 04	MW-5207002	MR BIT 1/4 04	0 ÷ 4	
MW-5107003	MR BIT 1/8 08	MW-5207003	MR BIT 1/4 08	0 ÷ 8	
MW-5107004	MR BIT 1/8 012	MW-5207004	MR BIT 1/4 012	0 ÷ 12	
MW-5108001	MRA BIT 1/8 02	MW-5208001	MRA BIT 1/4 02	0 ÷ 2	MRA BIT
MW-5108002	MRA BIT 1/8 04	MW-5208002	MRA BIT 1/4 04	0 ÷ 4	
MW-5108003	MRA BIT 1/8 08	MW-5208003	MRA BIT 1/4 08	0 ÷ 8	
MW-5108004	MRA BIT 1/8 012	MW-5208004	MRA BIT 1/4 012	0 ÷ 12	
MW-5111001	MR BIT FC 1/8 02	MW-5211001	MR BIT FC 1/4 02	0 ÷ 2	MR BIT FC
MW-5111002	MR BIT FC 1/8 04	MW-5211002	MR BIT FC 1/4 04	0 ÷ 4	



### Padlockable microregulator

BIT series micro-regulator valve is also available with a padlock. A pin with a hole projects from the top of the knob. When the knob is in the push-lock position, the padlock can be inserted in the hole, preventing any changes in the setting of the microregulator. A padlock and two keys are supplied with the regulator.

# INDUSTRIAL PNEUMATICS - air treatment units

## BIT series



### FR filter - regulator

**Size:** 1/8" 1/4"  
**Outlet press. range:** 0÷2, 0÷4, 0÷8, 0÷12 bar  
**Degree of filtration:** 5 µm, 20 µm, 50 µm  
**Inlet pressure:** Up to 13 bar  
**Working temp.:** Up to +50°C  
**Connection:** 1/8" 1/4" BSP female thread  
**Pressure gauge port:** 1/8" BSP female thread  
**Flow rate:** 600 l/min - 1/8"  
 600 l/min - 1/4"  
 (input pressure 6 bar and  $\Delta p = 1$  bar)

FR	BIT	1/4	5	02	RMSA
element	series	connection	degree of filtration	outlet pressure range	condensate drain
FR - filter regulator	BIT	1/8 - 1/8" 1/4 - 1/4"	5 - 5 µm 20 - 20 µm 50 - 50 µm	02 - 0÷2 bar 04 - 0÷4 bar 08 - 0÷8 bar 012 - 0÷12 bar	RMSA - manual/ semi-automatic SAC - automatic, using pressure drop

1/8"		1/4"		outlet pressure range [bar]	degree of filtration [µm]	condensate drain
code	type	code	type			
MW-5105001	FR BIT 1/8 5 02 RMSA	MW-5205001	FR BIT 1/4 5 02 RMSA	0 ÷ 2	5	RMSA
MW-5105013	FR BIT 1/8 5 02 SAC	MW-5205013	FR BIT 1/4 5 02 SAC			SAC
MW-5105002	FR BIT 1/8 20 02 RMSA	MW-5205002	FR BIT 1/4 20 02 RMSA		20	RMSA
MW-5105014	FR BIT 1/8 20 02 SAC	MW-5205014	FR BIT 1/4 20 02 SAC			SAC
MW-5105003	FR BIT 1/8 50 02 RMSA	MW-5205003	FR BIT 1/4 50 02 RMSA		50	RMSA
MW-5105015	FR BIT 1/8 50 02 SAC	MW-5205015	FR BIT 1/4 50 02 SAC			SAC
MW-5105004	FR BIT 1/8 5 04 RMSA	MW-5205004	FR BIT 1/4 5 04 RMSA	0 ÷ 4	5	RMSA
MW-5105016	FR BIT 1/8 5 04 SAC	MW-5205016	FR BIT 1/4 5 04 SAC			SAC
MW-5105005	FR BIT 1/8 20 04 RMSA	MW-5205005	FR BIT 1/4 20 04 RMSA		20	RMSA
MW-5105017	FR BIT 1/8 20 04 SAC	MW-5205017	FR BIT 1/4 20 04 SAC			SAC
MW-5105006	FR BIT 1/8 50 04 RMSA	MW-5205006	FR BIT 1/4 50 04 RMSA		50	RMSA
MW-5105018	FR BIT 1/8 50 04 SAC	MW-5205018	FR BIT 1/4 50 04 SAC			SAC
MW-5105007	FR BIT 1/8 5 08 RMSA	MW-5205007	FR BIT 1/4 5 08 RMSA	0 ÷ 8	5	RMSA
MW-5105019	FR BIT 1/8 5 08 SAC	MW-5205019	FR BIT 1/4 5 08 SAC			SAC
MW-5105008	FR BIT 1/8 20 08 RMSA	MW-5205008	FR BIT 1/4 20 08 RMSA		20	RMSA
MW-5105020	FR BIT 1/8 20 08 SAC	MW-5205020	FR BIT 1/4 20 08 SAC			SAC
MW-5105009	FR BIT 1/8 50 08 RMSA	MW-5205009	FR BIT 1/4 50 08 RMSA		50	RMSA
MW-5105021	FR BIT 1/8 50 08 SAC	MW-5205021	FR BIT 1/4 50 08 SAC			SAC
MW-5105010	FR BIT 1/8 5 012 RMSA	MW-5205010	FR BIT 1/4 5 012 RMSA	0 ÷ 12	5	RMSA
MW-5105022	FR BIT 1/8 5 012 SAC	MW-5205022	FR BIT 1/4 5 012 SAC			SAC
MW-5105011	FR BIT 1/8 20 012 RMSA	MW-5205011	FR BIT 1/4 20 012 RMSA		20	RMSA
MW-5105023	FR BIT 1/8 20 012 SAC	MW-5205023	FR BIT 1/4 20 012 SAC			SAC
MW-5105012	FR BIT 1/8 50 012 RMSA	MW-5205012	FR BIT 1/4 50 012 RMSA		50	RMSA
MW-5105024	FR BIT 1/8 50 012 SAC	MW-5205024	FR BIT 1/4 50 012 SAC			SAC

## BIT series



### LUB lubricator

<b>Size:</b>	1/8", 1/4"
<b>Tank volume:</b>	26.5 cm <sup>3</sup>
<b>Inlet pressure:</b>	Up to 13 bar
<b>Working temp.:</b>	Up to +50°C
<b>Connection:</b>	1/8", 1/4" BSP female thread
<b>Flow rate:</b>	710 l/min - 1/8" 710 l/min - 1/4" (input pressure 6 bar and $\Delta p = 1$ bar)

Compressed air lubricator is designed to saturate working medium with oil. It protects against corrosion and reduces the wear of pneumatic system elements.

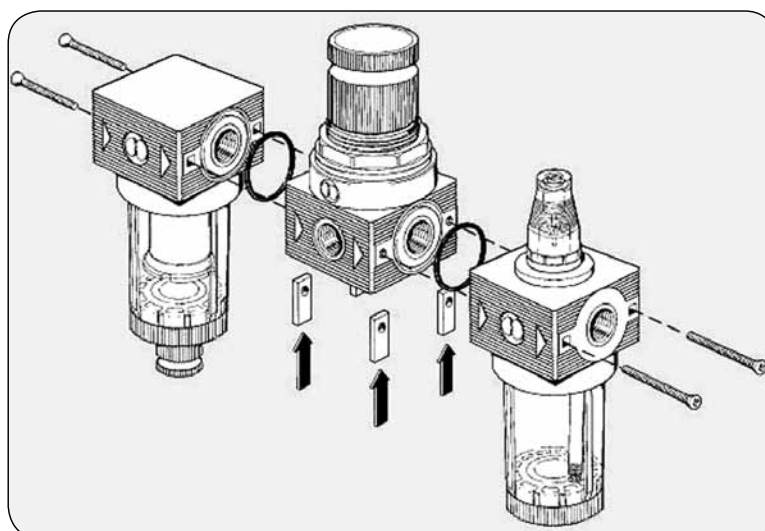
LUB		BIT		1/4	
element		series		connection	
LUB - lubricator		BIT		1/8 - 1/8" 1/4 - 1/4"	

1/8"		1/4"	
code	type	code	type
MW-5103001	LUB BIT 1/8	MW-5203001	LUB BIT 1/4

Air preparation elements of BIT series can be combined into units according to customer specifications.

### BIT elements assembly



- Fit the mounting plates (MW-9170201 assembly set) in the slots under the body of BIT element.
- Check if there are O-rings between threaded connections.
- Check the compatibility of flow direction with the arrows on the body of elements, connect elements.

Also available: wall mounting brackets (MW-9200701; MW-9170301) and spare parts: filter and lubricator tanks, handwheel sets for regulating valves, removable filter inserts and many other.

## BIT series



### Distributor

- Versions: PA
- Max. working pressure: 13 bar
- Max. working temperature: +50°C



### Air preparation unit - F+R+L

- Versions: F+R+L BIT 1/8", F+R+L BIT 1/4"
- Unit elements: filter, regulating valve, lubricator
- Threaded connection: 1/8", 1/4"
- Outlet pressure range: 0 - 2 - 4 - 8 - 12 bar
- Degree of filtration: 5 - 20 - 50 µm
- Nominal flow rate (at 6 bar,  $\Delta p = 1$  bar): 280 l/min
- Max. inlet pressure: 13 bar
- Max. working temperature: +50°C
- Condensate drain: manual, semi-automatic or automatic



### Air preparation unit - FR+L

- Versions: FR+L BIT 1/8", FR+L BIT 1/4"
- Unit elements: filter + regulating valve, lubricator
- Threaded connection: 1/8", 1/4"
- Outlet pressure range: 0 - 2 - 4 - 8 - 12 bar
- Degree of filtration: 5 - 20 - 50 µm
- Nominal flow rate (at 6 bar,  $\Delta p = 1$  bar): 260 l/min
- Max. inlet pressure: 13 bar
- Max. working temperature: +50°C
- Condensate drain: manual, semi-automatic or automatic



### Air preparation unit - F+D

- Versions: F+D BIT 1/8", F+D BIT 1/4"
- Unit elements: filter, precision filter
- Threaded connection: 1/8", 1/4"
- Degree of filtration: filter: 5 µm - precision filter: 0.01 µm
- Nominal flow rate (at 6 bar  $\Delta p = 1$  bar): 750 l/min
- Max. inlet pressure: 13 bar
- Max. working temperature: +50°C
- Condensate drain: manual, semi-automatic or automatic



### Air preparation unit - F+L

- Versions: F+L BIT 1/8", F+L BIT 1/4"
- Unit elements: filter, lubricator
- Threaded connection: 1/8", 1/4"
- Degree of filtration: 5 - 20 - 50 µm
- Nominal flow rate (at 6 bar,  $\Delta p = 1$  bar): 600 l/min
- Max. inlet pressure: 13 bar
- Max. working temperature: +50°C
- Condensate drain: manual, semi-automatic or automatic

## INDUSTRIAL PNEUMATICS - air treatment units

## NEW DEAL series

Due to its metal construction, the entire range of NEW DEAL elements is resistant to heavy duty working conditions. Designed for high pressure application (up to 18 bar).



## FIL filter

**Size:** 1/4", 3/8", 1/2", 3/4", 1"  
**Degree of filtration:** 4 µm, 20 µm, 50 µm  
**Inlet pressure:** Up to 18 bar  
**Working temp.:** Up to +50°C  
**Connection:** 1/4", 3/8", 1/2", 3/4", 1" BSP female thread  
**Condensate drain:** Manual / semi-automatic (RMSA)  
Automatic (SAC)  
**Flow rate:** 1720 l/min - 1/4"  
4100 l/min - 3/8", 1/2"  
11000 l/min - 3/4", 1"  
(input pressure 6 bar and  $\Delta p = 1$  bar)

<b>FIL</b>	<b>1/4</b>	<b>4</b>	<b>RMSA</b>
element	connection	degree of filtration	condensate drain
FIL - filter	1/4 - 1/4" 3/8 - 3/8" 1/2 - 1/2" 3/4 - 3/4" 1 - 1"	4 - 4 µm 20 - 20 µm 50 - 50 µm	RMSA - manual / semi-automatic SAC - automatic, using pressure drop RA - automatic, float type, drainage independent of the flow and pressure

1/4"		3/8"		1/2"		3/4"		1"		degree of filtration [µm]	conden- sate drain
code	type	code	type	code	type	code	type	code	type		
MW-1221005	FIL 1/4 4 RMSA	MW-1321005	FIL 3/8 4 RMSA	MW-1421005	FIL 1/2 4 RMSA	MW-1521005	FIL 3/4 4 RMSA	MW-1621005	FIL 1 4 RMSA	4	RMSA
MW-1221006	FIL 1/4 20 RMSA	MW-1321006	FIL 3/8 20 RMSA	MW-1421006	FIL 1/2 20 RMSA	MW-1521006	FIL 3/4 20 RMSA	MW-1621006	FIL 1 20 RMSA	20	
MW-1221008	FIL 1/4 50 RMSA	MW-1321008	FIL 3/8 50 RMSA	MW-1421008	FIL 1/2 50 RMSA	MW-1521008	FIL 3/4 50 RMSA	MW-1621008	FIL 1 50 RMSA	50	
MW-1221013	FIL 1/4 4 SAC	MW-1321013	FIL 3/8 4 SAC	MW-1421013	FIL 1/2 4 SAC	-	-	-	-	4	SAC
MW-1221014	FIL 1/4 20 SAC	MW-1321014	FIL 3/8 20 SAC	MW-1421014	FIL 1/2 20 SAC	-	-	-	-	20	
MW-1221016	FIL 1/4 50 SAC	MW-1321016	FIL 3/8 50 SAC	MW-1421016	FIL 1/2 50 SAC	-	-	-	-	50	
-	-	MW-1321009	FIL 3/8 4 RA	MW-1421009	FIL 1/2 4 RA	MW-1521009	FIL 3/4 4 RA	MW-1621009	FIL 1 4 RA	4	RA
-	-	MW-1321010	FIL 3/8 20 RA	MW-1421010	FIL 1/2 20 RA	MW-1521010	FIL 3/4 20 RA	MW-1621010	FIL 1 20 RA	20	
-	-	MW-1321012	FIL 3/8 50 RA	MW-1421012	FIL 1/2 50 RA	MW-1521012	FIL 3/4 50 RA	MW-1621012	FIL 1 50 RA	50	



## NEW DEAL series



### REG regulator

**Size:** 1/4", 3/8", 1/2", 3/4", 1"  
**Outlet press. range:** 0÷2, 0÷4, 0÷8, 0÷12 bar  
**Inlet pressure:** Up to 18 bar  
**Working temp.:** Up to +50°C  
**Connection:** 1/4", 3/8", 1/2", 3/4", 1" BSP thread  
**Pressure gauge port:** 1/8" BSP female thread for valves to 1/2" (above - BSP 1/4" female thread)  
**Flow rate:** 650 l/min - 1/4"  
 2500 l/min - 3/8", 1/2"  
 4500 l/min - 3/4", 1"  
 (input pressure 6 bar and  $\Delta p = 1$  bar)

**REG**

**1/4**

**04**

element	connection	outlet pressure range
REG - regulator	1/4 - 1/4" 3/8 - 3/8" 1/2 - 1/2" 3/4 - 3/4" 1 - 1"	02 - 0÷2 bar 04 - 0÷4 bar 08 - 0÷8 bar 012 - 0÷12 bar

1/4"		3/8"		1/2"		3/4"		1"		outlet press. range
code	type	code	type	code	type	code	type	code	type	
MW-1202004	REG 1/4 02	-	-	-	-	-	-	-	-	0 ÷ 2
MW-1202001	REG 1/4 04	MW-1302001	REG 3/8 04	MW-1402001	REG 1/2 04	MW-1502001	REG 3/4 04	MW-1602001	REG 1 04	0 ÷ 4
MW-1202002	REG 1/4 08	MW-1302002	REG 3/8 08	MW-1402002	REG 1/2 08	MW-1502002	REG 3/4 08	MW-1602002	REG 1 08	0 ÷ 8
MW-1202003	REG 1/4 012	MW-1302003	REG 3/8 012	MW-1402003	REG 1/2 012	MW-1502003	REG 3/4 012	MW-1602003	REG 1 012	0 ÷ 12



### Padlockable regulator

NEW DEAL series regulating valve is also available with a padlock. A pin with a hole projects from the top of the knob. When the knob is in the push-lock position, the padlock can be inserted in the hole, preventing any changes in the setting of the regulator. A padlock and two keys are supplied with the regulator.

# INDUSTRIAL PNEUMATICS - air treatment units

## NEW DEAL series



### FR filter - regulator

**Size:** 1/4", 3/8", 1/2"  
**Outlet press. range:** 0 ÷ 8, 0 ÷ 12 bar  
**Inlet pressure:** Up to 18 bar  
**Working temp.:** Up to +50°C  
**Connection:** 1/4", 3/8", 1/2" BSP female thread  
**Pressure gauge port:** 1/8" BSP female thread  
**Flow rate:** 700 l/min - 1/4"  
 2500 l/min - 3/8", 1/2"  
 (input pressure 6 bar and  $\Delta p = 1$  bar)

**FR**

**1/4**

**4**

**08**

**RMSA**

element	connection	degree of filtration	outlet pressure range	condensate drain
FR - filter - regulator	1/4 - 1/4" 3/8 - 3/8" 1/2 - 1/2"	4 - 4 µm 20 - 20 µm 50 - 50 µm	0 ÷ 8 0 ÷ 12	RMSA - manual/semi-automatic SAC - automatic, using pressure drop

1/4"		3/8"		1/2"		outlet pressure range [bar]	degree of filtration [µm]	condensate drain
code	type	code	type	code	type			
MW-1225029	FR 1/4 4 08 RMSA	MW-1325029	FR 3/8 4 08 RMSA	MW-1425029	FR 1/2 4 08 RMSA	0 ÷ 8	4	RMSA
MW-1225509	FR 1/4 4 08 SAC	MW-1325509	FR 3/8 4 08 SAC	MW-1425509	FR 1/2 4 08 SAC			SAC
MW-1225030	FR 1/4 20 08 RMSA	MW-1325030	FR 3/8 20 08 RMSA	MW-1425030	FR 1/2 20 08 RMSA		20	RMSA
MW-1225510	FR 1/4 20 08 SAC	MW-1325510	FR 3/8 20 08 SAC	MW-1425510	FR 1/2 20 08 SAC			SAC
MW-1225032	FR 1/4 50 08 RMSA	MW-1325032	FR 3/8 50 08 RMSA	MW-1425032	FR 1/2 50 08 RMSA		50	RMSA
MW-1225511	FR 1/4 50 08 SAC	MW-1325512	FR 3/8 50 08 SAC	MW-1425512	FR 1/2 50 08 SAC			SAC
MW-1225053	FR 1/4 4 012 RMSA	MW-1325053	FR 3/8 4 012 RMSA	MW-1425053	FR 1/2 4 012 RMSA	0 ÷ 12	4	RMSA
MW-1225513	FR 1/4 4 012 SAC	MW-1325513	FR 3/8 4 012 SAC	MW-1425513	FR 1/2 4 012 SAC			SAC
MW-1225054	FR 1/4 20 012 RMSA	MW-1325054	FR 3/8 20 012 RMSA	MW-1425054	FR 1/2 20 012 RMSA		20	RMSA
MW-1225514	FR 1/4 20 012 SAC	MW-1325514	FR 3/8 20 012 SAC	MW-1425514	FR 1/2 20 012 SAC			SAC
MW-1225056	FR 1/4 50 012 RMSA	MW-1325056	FR 3/8 50 012 RMSA	MW-1425056	FR 1/2 50 012 RMSA		50	RMSA
MW-1225516	FR 1/4 50 012 SAC	MW-1325516	FR 3/8 50 012 SAC	MW-1425516	FR 1/2 50 012 SAC			SAC

# INDUSTRIAL PNEUMATICS - air treatment units

## NEW DEAL series



### LUB lubricator

**Size:** 1/4", 3/8", 1/2", 3/4", 1"  
**Tank volume:** 50 cm<sup>3</sup> - 1/4"  
                   150 cm<sup>3</sup> - 3/8", 1/2"  
                   380 cm<sup>3</sup> - 3/4", 1"  
**Inlet pressure:** Up to 18 bar  
**Working temp.:** Up to +50°C  
**Connection:** 1/4", 3/8", 1/2", 3/4", 1" BSP female thread  
**Flow rate:** 1100 l/min - 1/4"  
                   4300 l/min - 3/8", 1/2"  
                   16000 l/min - 3/4", 1"  
                   (input pressure 6 bar and Δp = 1 bar)

**LUB**

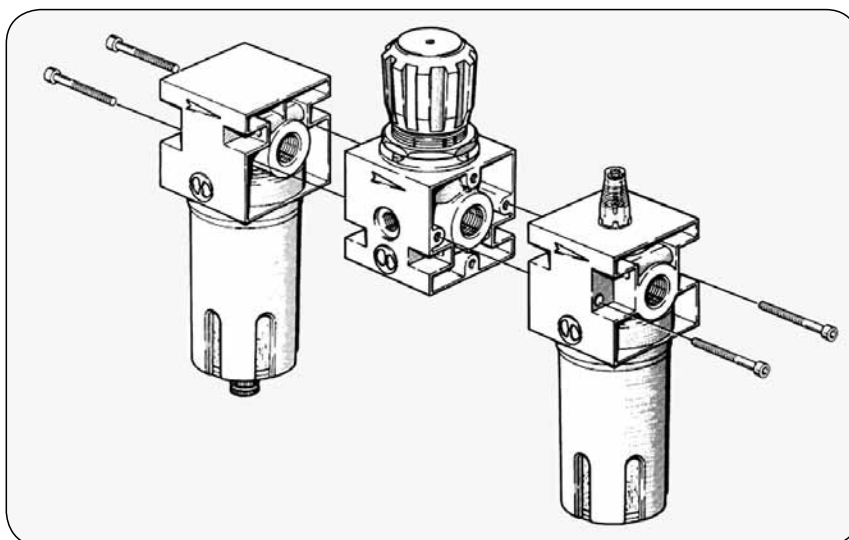
**1/4**

element	connection
LUB - lubricator	1/4 - 1/4" 3/8 - 3/8" 1/2 - 1/2" 3/4 - 3/4" 1 - 1"

1/4"		3/8"		1/2"		3/4"		1"	
code	type	code	type	code	type	code	type	code	type
MW-1223001	LUB 1/4	MW-1323001	LUB 3/8	MW-1423001	LUB 1/2	MW-1523001	LUB 3/4	MW-1623001	LUB 1

Air preparation elements of NEW DEAL series can be combined into units according to customer specifications.

### New Deal elements assembly



Also available: wall mounting brackets (MW-9200701; MW-9400701), mounting screws, filter and lubricator tanks, handwheel sets for regulating valves, removable filter inserts and many other.

## NEW DEAL series



### Pilot assisted pressure regulator

- Versions: REG. PIL. 3/8", 1/2"
- Threaded connection: 3/8", 1/2"
- Outlet pressure range: depends on a pilot valve
- Max. inlet pressure: 18 bar
- Nominal flow rate (at 6 bar,  $\Delta p = 1$  bar): 4500 l/min
- Max. working temperature: +50°C



### Pressure regulating start-up valve

- Threaded connection: 3/4", 1"
- Outlet pressure range: 0 - 2 - 4 - 8 - 12 bar
- Max. inlet pressure: 13 bar
- Nominal flow rate (at 6 bar,  $\Delta p = 1$  bar): 13000 l/min
- Max. working temperature: +50°C



### Depurator - D

- Versions: DEP. ND 3/8", DEP. ND 1/2"
- Threaded connection: 3/8", 1/2"
- Degree of purification: 99.97%
- Degree of filtration: 0.01 mm
- Nominal flow rate (at 6 bar,  $\Delta p = 1$  bar): 1600 l/min
- Recommended flow rate (at 6 bar): 230 l/min
- Max. working pressure: 18 bar
- Max. working temperature: +50°C
- Working medium: compressed air with 4  $\mu$ m filtration degree
- Condensate drain: manual, semi-automatic or automatic



### Start-up valves - V

- Versions: V3V ND 1/4", V3V ND 3/8"-1/2", V3V ND 3/4", V3V ND 1"
- Threaded connection: 1/4", 3/8", 1/2", 3/4", 1"
- Nominal flow rate (at 6 bar,  $\Delta p = 1$  bar): 1500 ÷ 10200 l/min (depends on the version)
- Max. working pressure: 13 ÷ 18 bar (depends on a version)
- Max. working temperature: +50°C
- Control: manual, electric



### Automatic condensate drains

- Version: SCAL. ND 1/2
- Threaded connection: 1/2"
- Max. working pressure: 18 bar
- Max. working temperature: +50°C

## NEW DEAL series



### Air preparation unit - FRL

- Versions: FRL ND 1/4", FRL ND 3/8", FRL ND 1/2", FRL ND 3/4", FRL ND 1"
- Unit elements: filter, regulating valve, lubricator
- Threaded connection: 1/4", 3/8", 1/2", 3/4", 1"
- Outlet pressure range: 0 - 2 - 4 - 8 - 12 bar
- Degree of filtration: 4 - 20 - 50  $\mu$ m
- Nominal flow rate (at 6 bar,  $\Delta p = 1$  bar): 400 ÷ 3700 l/min (depends on a version)
- Max. inlet pressure: 18 bar
- Max. working temperature: +50°C
- Condensate drain: manual, semi-automatic or automatic



### Air preparation unit - FR+L

- Versions: FR+L ND 1/4", FR+L ND 3/8", FR+L ND 1/2"
- Unit elements: filter + regulating valve, lubricator
- Threaded connection: 1/4", 3/8", 1/2"
- Outlet pressure range: 0 - 2 - 4 - 8 - 12 bar
- Degree of filtration: 4 - 20 - 50  $\mu$ m
- Nominal flow rate (at 6 bar,  $\Delta p = 1$  bar): 500 ÷ 2200 l/min (depends on a version)
- Max. inlet pressure: 18 bar
- Max. working temperature: +50°C
- Condensate drain: manual, semi-automatic or automatic



### Air preparation unit - FRPL

- Versions: FRPL ND 3/4", FRPL ND 1"
- Unit elements: filter, pilot operated regulating valve, lubricator
- Threaded connection: 3/4", 1"
- Outlet pressure range: 0 - 8 - 12 bar
- Degree of filtration: 4 - 20 - 50  $\mu$ m
- Nominal flow rate (at 6 bar,  $\Delta p = 1$  bar): 8500 l/min
- Max. inlet pressure: 13 bar
- Max. working temperature: +50°C
- Condensate drain: manual, semi-automatic or automatic



### Air preparation unit - VFRL

- Versions: VFRL ND 1/4", VFRL ND 3/8", VFRL ND 1/2"
- Unit elements: start-up valve, filter, regulating valve, lubricator
- Threaded connection: 1/4", 3/8", 1/2"
- Outlet pressure range: 0 - 2 - 4 - 8 - 12 bar
- Degree of filtration: 4 - 20 - 50  $\mu$ m
- Nominal flow rate (at 6 bar,  $\Delta p = 1$  bar): 390 ÷ 1700 l/min (depends on a version)
- Max. inlet pressure: 18 bar
- Max. working temperature: +50°C
- Condensate drain: manual, semi-automatic or automatic



### Air preparation unit - V+FR+L

- Versions: VFR+L ND 1/4", VFR+L ND 3/8", VFR+L ND 1/2"
- Unit elements: start-up valve, filter + regulating valve, lubricator
- Threaded connection: 1/4", 3/8", 1/2"
- Outlet pressure range: 0 - 2 - 4 - 8 - 12 bar
- Degree of filtration: 4 - 20 - 50  $\mu$ m
- Nominal flow rate (at 6 bar,  $\Delta p = 1$  bar): 480 ÷ 1900 l/min (depends on a version)
- Max. inlet pressure: 18 bar
- Max. working temperature: +50°C
- Condensate drain: manual, semi-automatic or automatic

## NEW DEAL series



### Air preparation unit - FRPVL

- Versions: FRPVL. ND 3/4", FRPVL. ND 1"
- Unit elements: filter, pilot operated regulating valve, start-up valve, lubricator
- Threaded connection: 3/4", 1"
- Outlet pressure range: 0 - 8 - 12 bar
- Degree of filtration: 4 - 20 - 50  $\mu\text{m}$
- Nominal flow rate (at 6 bar,  $\Delta p = 1$  bar): 8500 l/min
- Max. inlet pressure: 13 bar
- Max. working temperature: +50°C



### Air preparation unit - F+L

- Versions: F+L. ND 1/4", F+L. ND 3/8", F+L. ND 1/2", F+L. ND 3/4", F+L. ND 1"
- Unit elements: filter + lubricator
- Threaded connection: 1/4", 3/8", 1/2", 3/4", 1"
- Degree of filtration: 4 - 20 - 50  $\mu\text{m}$
- Nominal flow rate (at 6 bar,  $\Delta p = 1$  bar): 1000 ÷ 7500 l/min (depends on a version)
- Max. inlet pressure: 18 bar
- Max. working temperature: +50°C
- Condensate drain: manual, semi-automatic or automatic



### Air preparation unit - F+D

- Versions: F+D. ND 3/8", F+D. ND 1/2"
- Unit elements: filter, precision filter
- Threaded connection: 3/8", 1/2"
- Degree of filtration: filter: 4  $\mu\text{m}$  - precision filter: 0.01  $\mu\text{m}$
- Nominal flow rate (at 6 bar,  $\Delta p = 1$  bar): 1600 l/min
- Max. inlet pressure: 18 bar
- Max. working temperature: +50°C
- Condensate drain: manual, semi-automatic or automatic



### Distributor

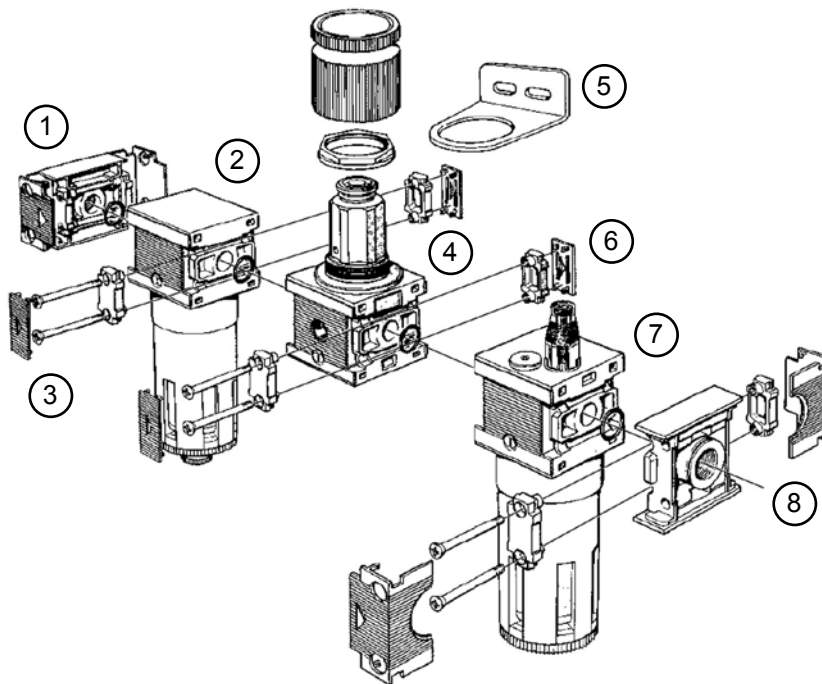
- Versions: PA ND 1/4", PA ND 3/8"-1/2", PA ND 3/4"-1"
- Threaded connection: 1/8", 1/4", 1/2"
- Max. working pressure: 18 bar
- Max. working temperature: +50°C

## SKILLAIR series

SKILLAIR series allows any combination of shut-off valves, filters, regulators, lubricators, branching modules. Each element can be disassembled without the need to disconnect supply pipes.

Using SKILLAIR series it is possible to create a unit consisting of several FRL elements according to customer specifications. To combine these elements, one or more connection sets must be used. To get the required inlet and outlet connection, the appropriate set of final plates should be used.

### An example of FRL unit



- 1, 8 - final plates (set)
- 2 - filter (FIL)
- 3, 6 - connection sets
- 4 - regulating valve (REG)
- 5 - mounting bracket to the wall
- 7 - lubricator (LUB)

The direction of air flow must be compatible with the direction pointed by the arrows on the elements.

series (size)				connection (BSP female)
100	200	300	400	
connection set				-
MW-9230301	MW-9330301	MW-9430301	MW-9630301	-
final plates set *				-
MW-9230401	MW-9330601	-	-	1/4"
MW-9330501	MW-9330701	-	-	3/8"
-	MW-9330801	MW-9430701	-	1/2"
-	-	MW-9530901	-	3/4"
-	-	MW-9531001	MW-9631001	1"
-	-	-	MW-9631101	1.1/4"
-	-	-	MW-9631201	1.1/2"
-	-	-	MW-9631301	2"

\* - with input and output connection

An example of FRL SKILLAIR 200 series unit consisting of:

- filter-reducer (FR) - adjustable in the range 0 ÷ 12 bar, filtration 20 µm and RMSA condensate drain,
- lubricator (LUB),
- final plates set with 1/2" connections and connection set.

final plates set	filter-regulator (FR)	connection set	lubricator (LUB)
MW-9330801	MW-3483011A	MW-9330301	MW-3481001A

# INDUSTRIAL PNEUMATICS - air treatment units

## SKILLAIR series



### FIL filter

**Size:** 100, 200, 300, 400  
**Degree of filtration:** 5 µm, 20 µm, 50 µm  
**Inlet pressure:** Up to 15 bar  
**Working temp.:** Up to +50°C  
**Connection:** 1/4" ÷ 2" BSP female thread  
**Condensate drain:** Manual / semi-automatic (RMSA)  
                                   Automatic (SAC) - 100 and 200 series  
                                   Automatic (RA) - 300 and 400 series  
**Flow rate:** 2000 l/min - 100 series  
                   3100 l/min - 200 series  
                   5300 l/min - 300 series  
                   16500 ÷ 20000 l/min - 400 series  
                   (input pressure 6 bar and Δp = 1 bar)

**FIL**

**100**

**5**

**RMSA**

element	series (size)	degree of filtration	condensate drain
FIL - filter	100 200 300 400	5 - 5 µm 20 - 20 µm 50 - 50 µm	RMSA - manual / semi-automatic SAC - automatic for 100 and 200 sizes, using pressure drop RA - automatic for 300 and 400 sizes, float type, drainage independent of the flow and pressure

100		200		300		400		degree of filtration [µm]	condensate drain
code	type	code	type	code	type	code	type		
MW-3280001A	FIL 100 5 RMSA	MW-3480001A	FIL 200 5 RMSA	MW-4480001A	FIL 300 5 RMSA	MW-6180001A	FIL 400 5 RMSA	5	RMSA
MW-3280002A	FIL 100 20 RMSA	MW-3480002A	FIL 200 20 RMSA	MW-4480002A	FIL 300 20 RMSA	MW-6180002A	FIL 400 20 RMSA	20	
MW-3280003A	FIL 100 50 RMSA	MW-3480003A	FIL 200 50 RMSA	MW-4480003A	FIL 300 50 RMSA	MW-6180003A	FIL 400 50 RMSA	50	
MW-3280007A	FIL 100 5 SAC	MW-3480007A	FIL 200 5 SAC	MW-4480004A	FIL 300 5 RA	MW-6180004A	FIL 400 5 RA	5	SAC / RA
MW-3280008A	FIL 100 20 SAC	MW-3480008A	FIL 200 20 SAC	MW-4480005A	FIL 300 20 RA	MW-6180005A	FIL 400 20 RA	20	
MW-3280009A	FIL 100 50 SAC	MW-3480009A	FIL 200 50 SAC	MW-4480006A	FIL 300 50 RA	MW-6180006A	FIL 400 50 RA	50	



# INDUSTRIAL PNEUMATICS - air treatment units

## SKILLAIR series



### REG regulator

**Size:** 100, 200, 300, 400  
**Outlet press. range:** 0÷2, 0÷4, 0÷8, 0÷12 bar  
**Inlet pressure:** Up to 15 bar  
**Working temp.:** Up to +50°C  
**Connection:** 1/4" ÷ 2" BSP female thread  
**Pressure gauge port:** 1/8" BSP female (1/4" for 400 series)  
**Flow rate:** 1600 l/min - 100 series  
                   3500 l/min - 200 series  
                   7000 l/min - 300 series  
                   18000 ÷ 20000 l/min - 400 series  
                   (input pressure 6 bar and  $\Delta p = 1$  bar)

**REG**

**100**

**02**

element	series (size)	outlet pressure range
REG - regulator	100 200 300 400	02 - 0÷2 bar 04 - 0÷4 bar 08 - 0÷8 bar 012 - 0÷12 bar

100		200		300		400		connection	outlet press. range
code	type	code	type	code	type	code	type		
MW-3202001A	REG 100 02	MW-3402001A	REG 200 02	MW-4402000A	REG 300 02	MW-6102001A	REG 400*	without final plates	0 ÷ 2
MW-3202002A	REG 100 04	MW-3402002A	REG 200 04	MW-4402001A	REG 300 04				0 ÷ 4
MW-3202003A	REG 100 08	MW-3402003A	REG 200 08	MW-4402002A	REG 300 08				0 ÷ 8
MW-3202004A	REG 100 012	MW-3402004A	REG 200 012	MW-4402003A	REG 300 012				0 ÷ 12

\* - additional pilot regulating valve (REG P) is required - it defines outlet pressure range

## SKILLAIR series



### REG P pilot regulator

<b>Size:</b>	1/4"
<b>Outlet press. range:</b>	0÷2, 0÷4, 0÷8, 0÷12 bar
<b>Inlet pressure:</b>	Up to 13 bar
<b>Working temp.:</b>	Up to +50°C
<b>Connection:</b>	1/4" BSP female thread
<b>Pressure gauge port:</b>	1/8" BSP female thread
<b>Flow rate:</b>	140 l/min (input pressure 6 bar and $\Delta p = 1$ bar)

Pilot regulators are utilized when great accuracy in maintaining the set pressure is required under changing operating conditions. Friction is almost eliminated therefore the valve features high accuracy and has low hysteresis. Continuous air release is necessary to ensure proper operation. It is not a sign of malfunction. Typical for regulating valves of large dimensions (400 series). It is recommended to use filtered air.

**REG P**

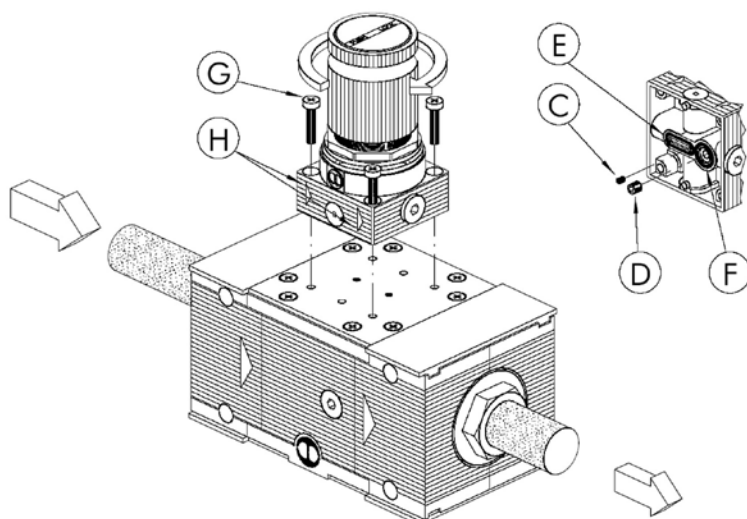
**1/4**

**02**

element	size	outlet pressure range
REG P - pilot regulator	1/4 - 1/4"	02 - 0÷2 bar 04 - 0÷4 bar 08 - 0÷8 bar 012 - 0÷12 bar

code	type	connection	outlet pressure range
MW-3206001	REG P 1/4 02	1/4" BSP	0 ÷ 2
MW-3206002	REG P 1/4 04		0 ÷ 4
MW-3206003	REG P 1/4 08		0 ÷ 8
MW-3206004	REG P 1/4 012		0 ÷ 12

Direct pilot regulator assembly on SKILLAIR regulating valve



- Remove the pins C and D under the pilot regulator.
- Check if two seals E and F under the pilot regulator are in place.
- Fix the pilot regulator to the body of the regulating valve using self-threading screws G. Make sure that the arrows H point in the same direction as the arrows on the body of the regulating valve.

## SKILLAIR series



### FR filter - regulator

**Size:** 100, 200, 300  
**Outlet press. range:** 0÷2, 0÷4, 0÷8, 0÷12 bar  
**Degree of filtration:** 5 µm, 20 µm, 50 µm  
**Inlet pressure:** Up to 15 bar  
**Working temp.:** Up to +50°C  
**Connection:** 1/4" ÷ 1" BSP thread  
**Pressure gauge port:** 1/8" BSP thread  
**Flow rate:** 1600 l/min - 100 series  
                   3000 l/min - 200 series  
                   5600 l/min - 300 series  
 (input pressure 6 bar and Δp = 1 bar)

FR	100	5	012	RMSA
element	series	degree of filtration	outlet press. range	condensate drain
FR - f filter - regulator	100 200 300 400	5 - 5 µm 20 - 20 µm 50 - 50 µm	02* - 0÷2 bar 04* - 0÷4 bar 08 - 0÷8 bar 012 - 0÷12 bar * - option	RMSA - manual / semi-automatic SAC - automatic for 100 and 200 sizes, using pressure drop RA - automatic for 300 size, float type, drainage independent of the flow and pressure

100		200		300		outlet press. range [bar]	degree of filtration [µm]	condensate drain
code	type	code	type	code	type			
MW-3283007A	FR 100 5 08 RMSA	MW-3483007A	FR 200 5 08 RMSA	MW-4483004A	FR 300 5 08 RMSA	0 ÷ 8	5	RMSA
MW-3283031A	FR 100 5 08 SAC	MW-3483031A	FR 200 5 08 SAC	MW-4483013A	FR 300 5 08 SAC			SAC / RA
MW-3283008A	FR 100 20 08 RMSA	MW-3483008A	FR 200 20 08 RMSA	MW-4483005A	FR 300 20 08 RMSA		20	RMSA
MW-3283032A	FR 100 20 08 SAC	MW-3483032A	FR 200 20 08 SAC	MW-4483014A	FR 300 20 08 SAC			SAC / RA
MW-3283009A	FR 100 50 08 RMSA	MW-3483009A	FR 200 50 08 RMSA	MW-4483006A	FR 300 50 08 RMSA		50	RMSA
MW-3283033A	FR 100 50 08 SAC	MW-3483033A	FR 200 50 08 SAC	MW-4483015A	FR 300 50 08 SAC			SAC / RA
MW-3283010A	FR 100 5 012 RMSA	MW-3483010A	FR 200 5 012 RMSA	MW-4483007A	FR 300 5 012 RMSA	0 ÷ 12	5	RMSA
MW-3283034A	FR 100 5 012 SAC	MW-3483034A	FR 200 5 012 SAC	MW-4483016A	FR 300 5 012 SAC			SAC / RA
MW-3283011A	FR 100 20 012 RMSA	MW-3483011A	FR 200 20 012 RMSA	MW-4483008A	FR 300 20 012 RMSA		20	RMSA
MW-3283035A	FR 100 20 012 SAC	MW-3483035A	FR 200 20 012 SAC	MW-4483017A	FR 300 20 012 SAC			SAC / RA
MW-3283012A	FR 100 50 012 RMSA	MW-3483012A	FR 200 50 012 RMSA	MW-4483009A	FR 300 50 012 RMSA		50	RMSA
MW-3283036A	FR 100 50 012 SAC	MW-3483036A	FR 200 50 012 SAC	MW-4483018A	FR 300 50 012 RA			SAC / RA

# INDUSTRIAL PNEUMATICS - air treatment units

## SKILLAIR series



### LUB lubricator

**Size:** 100, 200, 300, 400  
**Tank volume:** 50 cm<sup>3</sup> - 100 series  
                     95 cm<sup>3</sup> - 200 series  
                     160 cm<sup>3</sup> - 300 series  
                     800 cm<sup>3</sup> - 400 series  
**Inlet pressure:** Up to 15 bar  
**Working temp.:** Up to +50°C  
**Connection:** 1/4" ÷ 2" BSP female thread  
**Flow rate:** 1500 l/min - 100 series  
                   3700 l/min - 200 series  
                   5500 l/min - 300 series  
                   18000 ÷ 20000 l/min - 400 series  
                   (input pressure 6 bar and Δp = 1 bar)

**LUB**

**100**

**STD**

element	series (size)	oil filling method
LUB - lubricator	100 200 300 400	STD - standard version, oil refilling by disassembly of the tank or through the cap CA - automatic refilling, refill only when lubricator is working CD - vacuum refilling, pressure drop inside the tank enables refilling. CAML - automatic refilling with minimum level CDML - vacuum refilling with minimum level

100		200		300		400		connection	oil filling method
code	type	code	type	code	type	code	type		
MW-3281001A	LUB 100 STD	MW-3481001A	LUB 200 STD	MW-4481001A	LUB 300 STD	MW-6181001A	LUB 400 STD	without final plates	STD
MW-3281002A	LUB 100 CA	MW-3481002A	LUB 200 CA	MW-4481002A	LUB 300 CA	MW-6181002A	LUB 400 CA		CA
MW-3281005A	LUB 100 CD	MW-3481005A	LUB 200 CD	MW-4481005A	LUB 300 CD	MW-6181004A	LUB 400 CD		CD
				MW-4481006A	LUB 300 CDML	MW-6181006A	LUB 400 CDML		CDML
				MW-4481007A	LUB 300 CAML	MW-6181007A	LUB 400 CAML		CAML

## SKILLAIR series



### Filter - F

- Versions: FIL100, FIL200, FIL300, FIL400
- Threaded connection: 1/4", 3/8", 1/2", 3/4", 1", 1.1/4", 1.1/2", 2"
- Degree of filtration: 5 - 20 - 50  $\mu$ m
- Nominal flow rate (at 6 bar,  $\Delta p = 0.5$  bar): 1400 ÷ 20000 l/min (depends on a version)
- Max. working pressure: 13 ÷ 15 bar (depends on version)
- Max. working temperature: +50°C
- Condensate drain: manual, semi-automatic or automatic



### Pressure regulator - R

- Versions: REG100, REG200, REG300, REG400
- Threaded connection: 1/4", 3/8", 1/2", 3/4", 1", 1.1/4", 1.1/2", 2"
- Outlet pressure range: 0 - 2 - 4 - 8 - 12 bar
- Max. inlet pressure: 13 ÷ 15 bar (depends on version)
- Nominal flow rate (at 6 bar,  $\Delta p = 0.5$  bar): 1100 ÷ 20000 l/min (depends on a version)
- Max. working temperature: +50°C



### Battery regulator

- Version: REG100
- Threaded connection: 1/4", 3/8"
- Outlet pressure range: 0 - 2 - 4 - 8 - 12 bar
- Max. inlet pressure: 15 bar (depends on a version)
- Nominal flow rate (at 6 bar,  $\Delta p = 1$  bar): 950 l/min
- Max. working temperature: +50°C

Each subsequent throttle valve can have a different set pressure, independent of the previous valve. Working compressed air intake - from the pressure gauge port G 1/8"



### Precision pressure regulator

- Threaded connection: 1/4"
- Outlet pressure range: 0 - 2 - 4 - 8 - 12 bar
- Max. inlet pressure: 13 bar
- Nominal flow rate (at 6 bar,  $\Delta p = 1$  bar): 140 l/min
- Max. working temperature: +50°C



### Pilot operated pressure regulator

- Version: regulating valve with Skillair 300 pilot
  - Threaded connection: 1/2", 3/4", 1"
  - Outlet pressure range: depends on pilot valve
  - Max. inlet pressure: 13 bar
  - Nominal flow rate (at 6 bar,  $\Delta p = 1$  bar): 7000 l/min
  - Max. working temperature: +50°C
- Advantages: low air load loss, excellent sensitivity

## SKILLAIR series



### Pressure regulator - SKILLTRONIC

- Versions: SKILLTRONIC A and D, SKILLTRONIC 300A and 300D, SKILLTRONIC 400A and 400D
  - Threaded connection: 1/2", 3/4", 1", 1.1/4", 1.1/2", 2"
  - Outlet pressure range: 0.3 ÷ 7 bar
  - Max. inlet pressure: 8 bar
  - Nominal flow rate (at 6 bar,  $\Delta p = 0.5$  bar): 60 ÷ 18000 l/min (depends on a version)
  - Working temperature range: -10°C up to +50°C
  - Operation voltage: 24 V DC
- Advantages: excellent repeatability, sensitivity and extremely fast response time



### Pressure regulator with a filter - FR

- Versions: FR100, FR200, FR300,
- Threaded connection: 1/4", 3/8", 1/2", 3/4", 1"
- Outlet pressure range: 0 - 2 - 4 - 8 - 12 bar
- Degree of filtration: 5 - 20 - 50  $\mu m$
- Nominal flow rate (at 6 bar,  $\Delta p = 1$  bar): 1600 ÷ 5600 l/min (depends on a version)
- Max. inlet pressure: 13 ÷ 15 bar (depends on version)
- Max. working temperature: +50°C
- Condensate drain: manual, semi-automatic or automatic



### Lubricator

- Versions: LUB100, LUB200, LUB300, LUB400
- Threaded connection: 1/4", 3/8", 1/2", 3/4", 1", 1.1/4", 1.1/2", 2"
- Degree of filtration: 5 - 20 - 50  $\mu m$
- Nominal flow rate (at 6 bar,  $\Delta p = 0.5$  bar): 1100 ÷ 21000 l/min (depends on a version)
- Max. working temperature: +50°C
- Various ways of filling with lubricant



### Depurator - D

- Versions: DEP100, DEP200, DEP300, DEP400
- Threaded connection: 1/4", 3/8", 1/2", 3/4", 1", 1.1/4", 1.1/2", 2"
- Degree of purification: 99.97%
- Degree of filtration: 0.01  $\mu m$
- Nominal flow rate (at 6 bar,  $\Delta p = 0.5$  bar): 750 ÷ 8000 l/min (depends on a version)
- Max. working pressure: 13 ÷ 15 bar (depends on a version)
- Max. working temperature: +50°C
- Working medium: compressed air with 5  $\mu m$  filtration degree
- Condensate drain: manual, semi-automatic or automatic



### Start-up valves

- Versions: V3V100, V3V200, V3V300, V3V400
- Threaded connection: 1/4", 3/8", 1/2", 3/4", 1", 1.1/4", 1.1/2", 2"
- Nominal flow rate (at 6 bar,  $\Delta p = 0.5$  bar): 1300 to 14000 l/min (depends on a version)
- Max. working pressure: 13 to 15 bar (depends on a version)
- Min. inlet pressure (electrically controlled valves): 3 to 4 bar
- Max. working temperature: +50°C
- Control: manual, pneumatic, electrical

## SKILLAIR series



### Soft-start valve

- Versions: APR100, APR200, APR300, APR400
- Threaded connection: 1/4", 3/8", 1/2", 3/4", 1", 1.1/4", 1.1/2", 2"
- Nominal flow rate (at 6 bar,  $\Delta p = 0.5$  bar): 1300 ÷ 14000 l/min (depends on a version)
- Max. working pressure: 13 ÷ 15 bar (depends on a version)
- Min. inlet pressure (electrically controlled valves): 3 ÷ 4 bar
- Max. working temperature: +50°C
- Control: pneumatic, electrical



### Distributor

- Versions: PA100, PA200, PA300, PA400
- Threaded connection: 1/4", 3/8", 1/2", 3/4", 1", 1.1/4", 1.1/2", 2"
- Max. working pressure: 13 ÷ 15 bar (depends on a version)
- Max. working temperature: +50°C



### Air preparation unit - FRL

- Versions: FRL100, FRL200, FRL300, FRL400
- Unit elements: filter, regulating valve, lubricator
- Threaded connection: 1/4", 3/8", 1/2", 3/4", 1", 1.1/4", 1.1/2", 2"
- Outlet pressure range: 0 - 8 - 12 bar
- Degree of filtration: 5 - 20 - 50  $\mu$ m
- Nominal flow rate (at 6 bar,  $\Delta p = 0.5$  bar): 300 ÷ 14000 l/min (depends on a version)
- Max. inlet pressure: 13 ÷ 15 bar (depends on a version)
- Max. working temperature: +50°C
- Condensate drain: manual, semi-automatic or automatic



### Air preparation unit - FR+L

- Versions: FR+L100, FR+L200, FR+L300
- Unit elements: filter, regulating valve + lubricator
- Threaded connection: 1/4", 3/8", 1/2", 3/4", 1"
- Outlet pressure range: 0 - 8 - 12 bar
- Degree of filtration: 5 - 20 - 50  $\mu$ m
- Nominal flow rate (at 6 bar,  $\Delta p = 0.5$  bar): 300 ÷ 2300 l/min (depends on a version)
- Max. inlet pressure: 13 ÷ 15 bar (depends on a version)
- Max. working temperature: +50°C
- Condensate drain: manual, semi-automatic or automatic



### Air preparation unit - VFRL

- Versions: FRL100, FRL200, FRL300, FRL400
- Unit elements: start-up valve, filter, regulating valve, lubricator
- Threaded connection: 1/4", 3/8", 1/2", 3/4", 1", 1.1/4", 1.1/2", 2"
- Outlet pressure range: 0 - 8 - 12 bar
- Degree of filtration: 5 - 20 - 50  $\mu$ m
- Nominal flow rate (at 6 bar,  $\Delta p = 0.5$  bar): 300 ÷ 14000 l/min (depends on a version)
- Max. inlet pressure: 13 ÷ 15 bar (depends on a version)
- Max. working temperature: +50°C
- Condensate drain: manual, semi-automatic or automatic

## SKILLAIR series



### Air preparation unit - V+FR+L

- Version: V+FR+L100, V+FR+L200, V+FR+L300,
- Unit elements: start-up valve, filter, regulating valve, lubricator
- Threaded connection: 1/4", 3/8", 1/2", 3/4", 1"
- Outlet pressure range: 0 - 8 - 12 bar
- Degree of filtration: 5 - 20 - 50  $\mu\text{m}$
- Nominal flow rate (at 6 bar,  $\Delta p = 0.5$  bar): 300 ÷ 2300 l/min (depends on a version)
- Max. inlet pressure: 13 ÷ 15 bar (depends on a version)
- Max. working temp.: +50°C
- Condensate drain: manual, semi-automatic or automatic



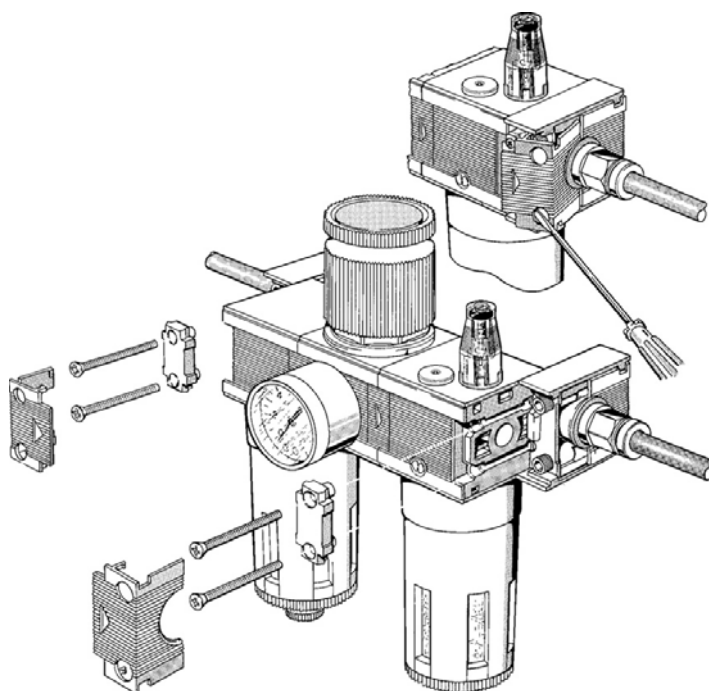
### Air preparation unit - F+L

- Version: F+L100, F+L200, F+L300, F+L400
- Unit elements: filter, lubricator
- Threaded connection: 1/4", 3/8", 1/2", 3/4", 1", 1.1/4", 1.1/2", 2"
- Degree of filtration: 5 - 20 - 50  $\mu\text{m}$
- Nominal flow rate (at 6 bar,  $\Delta p = 0.5$  bar): 600 ÷ 14000 l/min
- Max. inlet pressure: 13 ÷ 15 bar (depends on a version)
- Max. working temp.: +50°C
- Condensate drain: manual, semi-automatic or automatic



### Air preparation unit - F+D

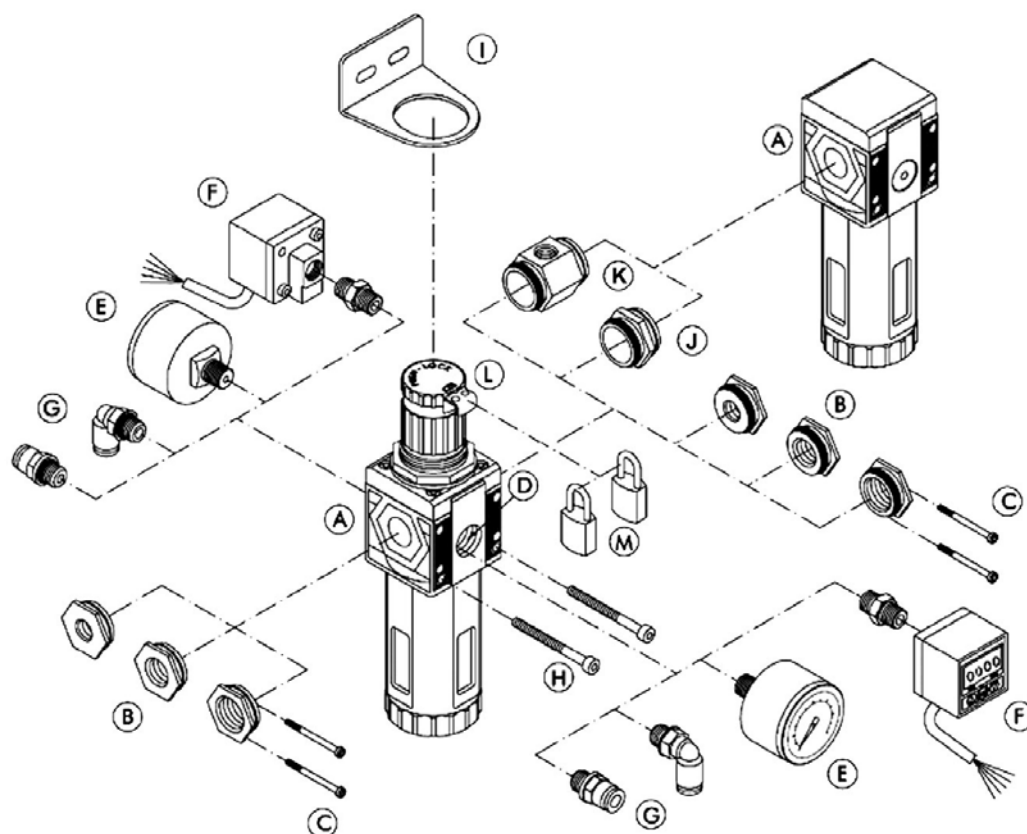
- Version: F+D100, F+D200, F+D300, F+D400
- Unit elements: filter, depurator
- Threaded connection: 1/4", 3/8", 1/2", 3/4", 1", 1.1/4", 1.1/2", 2"
- Degree of filtration: filter: 5  $\mu\text{m}$  - precision filter: 0.01  $\mu\text{m}$
- Nominal flow rate (at 6 bar,  $\Delta p = 0.5$  bar): 600 ÷ 7000 l/min
- Max. inlet pressure: 13 ÷ 15 bar (depends on a version)
- Max. working temp.: +50°C
- Condensate drain: manual, semi-automatic or automatic





## SYNTESI series

SYNTESI provides full modularity and flexibility that SKILLAIR series is known for. The application of threaded metal connections and assembly sets have eliminated such traditional parts as draw bolts and connecting clamps. Therefore the system has become more economical and simple.



Various elements of SYNTESI system can be combined with each other and with pneumatic system using hexagonal nickel brass bushes (B, J, K). The bushes are easy to remove by unscrewing the two front screws (C). At the front and back of every SYNTESI unit there are 1/8" additional connections for e.g. pressure gauges (E), pressure switches (F) or push-in connections (G). The connections enable independent intake of compressed air from any particular element of air preparation unit. The elements of SYNTESI system can be mounted directly to the wall using two M4 screws (H) or indirectly using a mounting bracket (I). A padlockable knob (L) for a manual control shut-off valve, regulating valve and for filter-regulator can be used with one or two padlocks (M) securing from an unintentional change of regulating valve settings or shut-off valve start.

**Table of SYNTESI system accessories**

description	SY 1			SY 2			
	1/8"	1/4"	3/8"	3/8"	1/2"	3/4"	1"
nickel brass bushes (B) *	MW-9210001	MW-9210002	MW-9210003	MW-9210011	MW-9210012	MW-9210013	MW-9210014
connection set (J, K) **	MW-9210000, MW-5610P100			MW-9210010, MW-5620P100			
steel bracket (I)	MW-9200701			MW-9400701			
padlock (M)				MW-9062401			
gauge adapter 1/4" - 1/8"				MW-9210005			

\* - with a connection (1 pc.) and 2 screws

\*\* - with a connector and 4 screws

X - AISI 304 steel version, code example: MW-9210001X, MW-5X20P100

# INDUSTRIAL PNEUMATICS - air treatment units

## SYNTESI series



### Filter FIL

**Size:** SY1, SY2  
**Degree of filtration:** 5 µm, 20 µm, 50 µm  
**Inlet pressure:** Up to 15 bar  
**Working temp.:** Up to +50°C  
**Connection:** BSP 1/8" ÷ 3/8" female thread for SY1  
 BSP 3/8" ÷ 1" female thread for SY2  
**Condensate drain:** Manual/ semiautomatic (RMSA)  
 Automatic float type (RA)  
**Flow rate:** 1300 l/min - 1/8"  
 1650 l/min - 1/4"  
 1750 l/min - 3/8" (SY1)  
 4500 l/min - 3/8" (SY2)  
 5200 l/min - 1/2", 3/4", 1"  
 (input pressure 6 bar and Δp = 1 bar)

FIL	SY1	5	RMSA
element	size	degree of filtration	condensate drop
FIL - filter	SY1 SY2	5 - 5 µm 20 - 20 µm 50 - 50 µm	RMSA - manual/semi-automatic RA - automatic, float type

The elements of SYNTESI system can be easily used to build FRL unit according to customer specifications. The connection set and bushings facilitate assembly.

code	type	connection	degree of filtration [µm]	condensate drop
MW-5610F100	FIL SY1 5 RMSA	without bushing	5	RMSA
MW-5610F200	FIL SY1 20 RMSA		20	
MW-5610F300	FIL SY1 50 RMSA		50	
MW-5610F400	FIL SY1 5 RA		5	RA
MW-5610F500	FIL SY1 20 RA		20	
MW-5610F600	FIL SY1 50 RA		50	
MW-5620F100	FIL SY2 5 RMSA	without bushing	5	RMSA
MW-5620F200	FIL SY2 20 RMSA		20	
MW-5620F300	FIL SY2 50 RMSA		50	
MW-5620F400	FIL SY2 5 RA		5	RA
MW-5620F500	FIL SY2 20 RA		20	
MW-5620F600	FIL SY2 50 RA		50	

## SYNTESI series



### REG regulator

<b>Size:</b>	SY1, SY2
<b>Outlet press. range:</b>	0÷2, 0÷4, 0÷8, 0÷12 bar
<b>Inlet pressure:</b>	Up to 15 bar
<b>Working temp.:</b>	Up to +50°C
<b>Connection:</b>	BSP 1/8" ÷ 3/8" female thread for SY1 BSP 3/8" ÷ 1" female thread for SY2
<b>Pressure gauge port:</b>	BSP 1/8" female thread for SY1 BSP 1/4" female thread for SY2
<b>Flow rate:</b>	1200 l/min - 1/8" 2800 l/min - 1/4" 3350 l/min - 3/8" (SY1) 5300 l/min - 3/8" (SY2) 7400 l/min - 1/2" 7600 l/min - 3/4", 1" (input pressure 6 bar and $\Delta p = 1$ bar)

Instead of a flat membrane, SYNTESI pressure regulator employs a rolling membrane, which guarantees:

- greater nominal flow rate - a result of increased membrane stroke,
- quicker response to the change of settings - a result of reduced dynamic and static friction,
- greater accuracy in maintaining outlet pressure settings at variable flow rates and supply pressure.

If the outlet pressure rises above the set value, the membrane opens the relief valve and vents the regulator until the pressure drops to the set level. The regulator has a push-lock mechanism which locks the knob in any position when it is pushed down. A blocking plate enables padlock assembly, securing from an unintentional change of outlet pressure setting. Additional 1/8" connections, one at the front and one at the back, can be used for pressure gauges, pressure switches or push-in connections. The air taken in through these elements is appropriately reduced.

REG	SY1	02
element	size	outlet pressure range
REG - regulator	SY1 SY2	02 - 0÷2 bar 04 - 0÷4 bar 08 - 0÷8 bar 012 - 0÷12 bar

The elements of SYNTESI system can be easily used to build FRL unit according to customer specifications. The connection set and bushings facilitate assembly.

code	type	connection	outlet pressure range
MW-5610R100	REG SY1 02	without bushing	0 ÷ 2
MW-5610R120	REG SY1 04		0 ÷ 4
MW-5610R140	REG SY1 08		0 ÷ 8
MW-5610R160	REG SY1 012		0 ÷ 12
MW-5620R100	REG SY2 02	without bushing	0 ÷ 2
MW-5620R120	REG SY2 04		0 ÷ 4
MW-5620R140	REG SY2 08		0 ÷ 8
MW-5620R160	REG SY2 012		0 ÷ 12

X - AISI 304 steel version, code example: MW-5X10F100

# INDUSTRIAL PNEUMATICS - air treatment units

## SYNTESI series



### FR filter - regulator

<b>Size:</b>	SY1, SY2
<b>Outlet press. range:</b>	0÷2, 0÷4, 0÷8, 0÷12 bar
<b>Degree of filtration:</b>	5 µm, 20 µm, 50 µm
<b>Inlet press:</b>	Up to 15 bar
<b>Working temp.:</b>	Up to +50°C
<b>Connection:</b>	BSP 1/8" ÷ 3/8" female thread for SY1 BSP 3/8" ÷ 1" female thread for SY2
<b>Pressure gauge port:</b>	BSP 1/8" female thread for SY1 BSP 1/4" female thread for SY2
<b>Flow rate:</b>	1300 l/min - 1/8" 2000 l/min - 1/4" 3000 l/min - 3/8" (SY1) 5800 l/min - 3/8" (SY2) 7200 l/min - 1/2" 7400 l/min - 3/4", 1" (input pressure 6 bar and Δp = 1 bar)

Filter-regulator combines the functions of filtration and pressure regulation in a single unit. It is made up of the same elements forming the filter and the regulator so technical parameters are the same.

FR	SY1	5	012	RMSA
element	size	degree of filtration	outlet pressure range	condensate drain
FR filter - regulator	SY1 SY2	5 - 5 µm 20 - 20 µm 50 - 50 µm	02* - 0÷2 bar 04* - 0÷4 bar 08 - 0÷8 bar 012 - 0÷12 bar * - option	RMSA - manual / semi-automatic RA - automatic, float type

The elements of SYNTESI system can be easily used to build FRL unit according to customer specifications. The connection set and bushings facilitate assembly.

code	type	connection	outlet pressure range [bar]	degree of filtration [µm]	condensate drain
MW-5610B140	FR SY1 5 08 RMSA	without bushing	0 ÷ 8	5	RMSA
MW-5610B440	FR SY1 5 08 RA				RA
MW-5610B240	FR SY1 20 08 RMSA			20	RMSA
MW-5610B540	FR SY1 20 08 RA				RA
MW-5610B340	FR SY1 50 08 RMSA			50	RMSA
MW-5610B640	FR SY1 50 08 RA				RA
MW-5610B160	FR SY1 5 012 RMSA		0 ÷ 12	5	RMSA
MW-5610B460	FR SY1 5 012 RA				RA
MW-5610B260	FR SY1 20 012 RMSA			20	RMSA
MW-5610B560	FR SY1 20 012 RA				RA
MW-5610B360	FR SY1 50 012 RMSA			50	RMSA
MW-5610B660	FR SY1 50 012 RA				RA
MW-5620B140	FR SY2 5 08 RMSA	without bushing	0 ÷ 8	5	RMSA
MW-5620B440	FR SY2 5 08 RA				RA
MW-5620B240	FR SY2 20 08 RMSA			20	RMSA
MW-5620B540	FR SY2 20 08 RA				RA
MW-5620B340	FR SY2 50 08 RMSA			50	RMSA
MW-5620B640	FR SY2 50 08 RA				RA
MW-5620B160	FR SY2 5 012 RMSA		0 ÷ 12	5	RMSA
MW-5620B460	FR SY2 5 012 RA				RA
MW-5620B260	FR SY2 20 012 RMSA			20	RMSA
MW-5620B560	FR SY2 20 012 RA				RA
MW-5620B360	FR SY2 50 012 RMSA			50	RMSA
MW-5620B660	FR SY2 50 012 RA				RA

# INDUSTRIAL PNEUMATICS - air treatment units

## SYNTESI series



### LUB lubricator

**Size:** SY1, SY2  
**Tank volume:** 60 cm<sup>3</sup>  
**Input pressure:** Up to 15 bar  
**Working temp.:** Up to +50°C  
**Connection:** BSP (1/8" ÷ 3/8") female thread for SY1  
                   BSP (3/8" ÷ 1") female thread for SY2  
**Flow rate:** 1600 l/min - 1/8"  
                   3000 l/min - 1/4"  
                   3650 l/min - 3/8" (SY1, SY2)  
                   6100 l/min - 1/2", 3/4", 1"  
                   (input pressure 6 bar and Δp = 1 bar)

LUB	SY1	STD
element	size	oil filling method
LUB - lubricator	SY1 SY2	STD standard version, filling with oil through oil replenishment cap

The elements of SYNTESI system can be easily used to build FRL unit according to customer specifications. The connection set and bushings facilitate assembly.

code	type	connection	oil filling method
MW-5610L100	LUB SY1	without bushing	STD
MW-5620L100	LUB SY2		

## Accessories - pressure gauge



### Pressure gauge - M type

**Size:** 1/8" 1/4"  
**Measuring range:** 0÷4, 0÷12 bar  
**Working temp.:** Up to +50°C  
**Shield size:** 40, 50, 63 mm  
**Casing material:** Plastic  
**Shield material:** Aluminium  
**Filling:** None (dry gauge)

General purpose pressure gauge mounted to reducers of BIT, SYNTESI, NEW DEAL and SKILLAIR type. Its measuring range should be selected according to working pressure so that it does not exceed 75% of max. scope. The scale expressed in bar and PSI.

M	40	1/8	04
element	shield size	connection	measuring range
M - pressure gauge	40 mm 50 mm 63 mm	1/8 - 1/8" 1/4 - 1/4"	04 - 0 ÷ 4 bar 12 - 0 ÷ 12 bar

code	type	shield size [mm]	measuring range [bar]
MW-9700101	M 40 1/8 12	40	0 ÷ 12
MW-9700110	M 40 1/8 12		0 ÷ 4
MW-9700102	M 40 1/8 04		
MW-9800101	M 50 1/8 12	50	0 ÷ 12
MW-9800102	M 50 1/8 04		0 ÷ 4
MW-9900101	M 63 1/4 12	63	0 ÷ 12

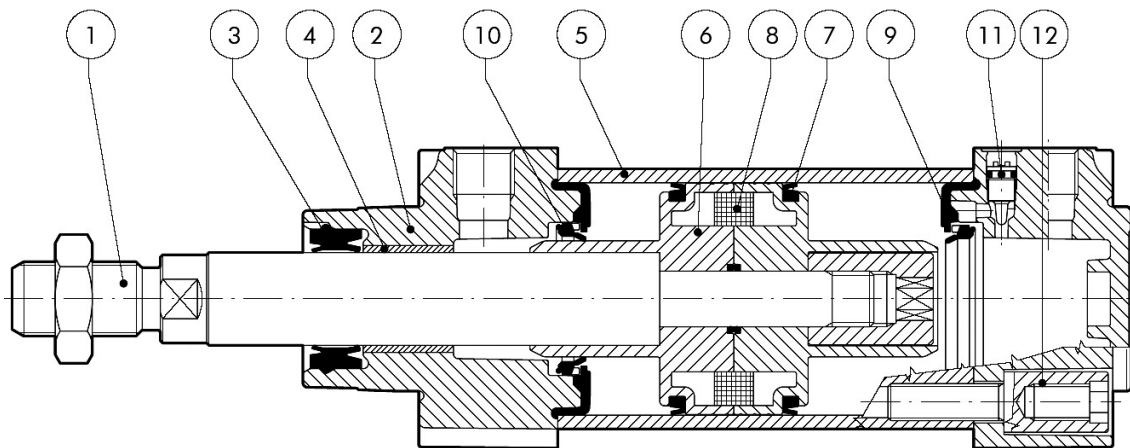
## Actuators

Pneumatic actuators are usually utilized as executing elements in pneumatic systems. Available in a single-acting version (with a spring), double-acting and with a through-rod. In a single-acting version output position is forced by the spring, and a change of piston position requires compressed air intake. In a double-acting version both feed and return of the piston is obtained by compressed air. The actuators can be additionally equipped with magnets used for Non-contact Piston Position Detection and stroke cushioning.

Special design cylinders, "non-stick slip" version, are used to ensure smooth regulation of work. Used at low piston speed and transverse loads.

To prevent rotation of an actuator, it is recommended to use the piston rod of a special shape (TF actuator version) or guides. Then the piston rod and elements that are fixed to it are at constant angle or can transfer specified torque. All actuators are designed for operation with unlubricated air and do not require any maintenance. If lubricated air is used, lubrication must be continuous because it replaces the factory-applied grease.

### Construction of ISO 15552 actuator



1. Piston rod: C45 steel or stainless steel, thick chromed.
2. Head: die cast aluminium.
3. Piston rod seal: polyurethane, NBR or FKM/FPM.
4. Guide bushing.
5. Body: drawn anodised calibrated aluminium.
6. Piston: self-lubricating technopolymer
7. Piston seal: polyurethane, NBR or FKM/FPM.
8. Magnet: plastroferrite.
9. Buffer + static O-rings: NBR or FKM/FPM
10. Cushioning seal: polyurethane, NBR or FKM/FPM.
11. Cushioning needle: OT 58 brass, with needle out movement safety system even when fully open.
12. Screws: for assembly.

# INDUSTRIAL PNEUMATICS - actuators

## ISO 6432 mini-cylinders



### ISO 6432 Ø 8 ÷ 25 mm

**Piston diameter:** Ø 8, 10, 12, 16, 20, 25 mm

**Working stroke:** Up to 500 mm

**Working press.:** From 0.8 up to 10 bar - Ø 8 ÷ 12 mm  
From 0.6 up to 10 bar - Ø 16 ÷ 25 mm

**Working temp.:** From -35°C up to +150°C

112	0	12	0050	X	P
version	construction	piston diameter	working stroke	material	sealing
101 - SE axial connection 102 - DEM axial connection 106* - SE 109* - DEA 110 - DE 111 - SE 112 - DEM 113 - DEMA	O - standard V - without head nut S - non-magnetic G - non-stick slip	08** 10** 12** 16 20 25	up to 500 mm	A - piston rod: C45 chrome piston: aluminium C - piston rod: C45 chrome piston: technopolymer Z - piston rod and nut: stainless steel piston: aluminium X - piston rod and nut: stainless steel piston: technopolymer	N - NBR P - polyurethane V - Viton*** B - low temperature***

\* - available from Ø16mm piston diameter,

\*\* - stainless steel piston rod,

\*\*\* - only for non-magnetic versions and with aluminium piston.

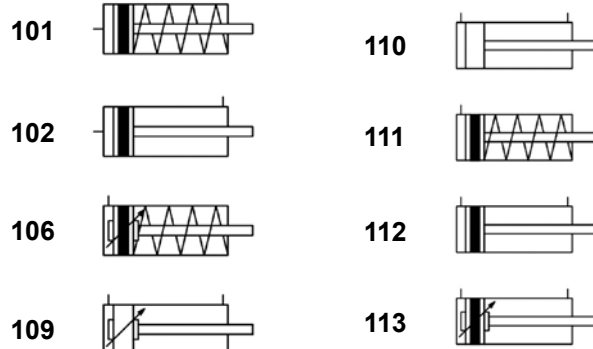
SE - single-acting (magnetic), cushioned (101, 111), adjustable cushioning (106),

DE - double-acting (non-magnetic), cushioned,

DEA - double-acting (non-magnetic), adjustable cushioning,

DEM - double-acting (magnetic), cushioned (102, 112),

DEMA - double-acting (magnetic), adjustable cushioning.



There are also economic versions of actuators (reduced weight) or versions made of stainless steel available.



## Round cylinders RNDC series



### RNDC Ø 32 ÷ 50 mm

**Piston diameter:** Ø 32, 40, 50 mm

**Working stroke:** Up to 500 mm

**Working press.:** From 0.4 up to 10 bar - Ø 32, 40 mm  
From 0.3 up to 10 bar - Ø 50 mm

**Working temp.:** From -35°C up to +150°C

111	0	32	0100	C	N
version	construction	piston diameter	working stroke	material	sealing
109 - DEA 110 - DE 111* - SE 112 - DEM 113 - DEMA	O - standard V - without head nut S - non-magnetic G - non-stick slip	32 40 50	up to 500 mm	A - piston rod: C45 chrome piston: aluminium C - piston rod: C45 chrome piston: technopolymer Z - piston rod and nut: stainless steel piston: aluminium X - piston rod and nut: stainless steel piston: technopolymer	N - NBR P - polyurethane V - Viton** B - low temperature**

\* - only for version with aluminium piston

\*\* - only for non-magnetic versions and with aluminium piston

SE - single-acting (magnetic), cushioned (available only with aluminium piston)

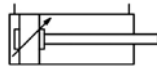
DE - double-acting (non-magnetic), cushioned

DEA - double-acting (non-magnetic), adjustable cushioning

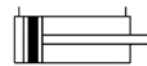
DEM - double-acting (magnetic), cushioned

DEMA - double-acting (magnetic), adjustable cushioning

109



112



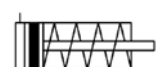
110



113



111



Actuators made of stainless steel are also available.

# INDUSTRIAL PNEUMATICS - actuators

## ISO 15552 cylinders



### ISO 15552 type A Ø 32 ÷ 125 mm

**Piston diameter:** Ø 32, 40, 50, 63, 80, 100, 125 mm

**Working stroke:** Up to 2800 mm

**Working press.:** From 0.4 up to 10 bar - Ø 32, 40 mm  
From 0.3 up to 10 bar - Ø 50, 63 mm  
From 0.2 up to 10 bar - Ø 80 ÷ 125 mm

**Working temp.:** From -35°C up to +150°C

121	A	A1	0100	C	P
version	construction	piston diameter	working stroke	material	sealing
121 - DEMA 124 - DEM 126* - SE*	A - standard B - non stick slip C non-magnetic	32 40 50 63 80 A1 - 100 A2 - 125	up to 2800 mm	A - piston rod: C45 chrome piston: aluminium (standard for Ø ≥ 80 mm) C - piston rod: C45 chrome piston: technopolymer (standard for Ø ≤ 63 mm) Z - piston rod and nut: stainless steel piston: aluminium X - piston rod and nut: stainless steel piston: technopolymer	N - NBR P - polyurethane V - Viton** B - low temperature**

\* - available up to Ø 63, only with aluminium piston

\*\* - available only for non-magnetic versions and with aluminium piston

DEMA - double-acting (magnetic), adjustable cushioning

DEM - double-acting (magnetic), cushioned

SE - single-acting (magnetic), adjustable cushioning



There are also economic versions of actuators (reduced weight) or versions made of stainless steel available.

## ISO 15552 cylinders



### ISO 15552 Ø 160 ÷ 200 mm

**Piston diameter:** Ø 160, 200, mm

**Working stroke:** From 25 up to 2800 mm

**Working press.:** Up to 10 bar

**Working temp.:** From -10°C up to +70°C

**W121**

**160**

**0050**

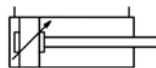
version	piston diameter	working stroke
W120 - DEA W121 - DEMA W124 - DEM	160 - piston rod: C45 chrome - seal: NBR 200 - piston rod: C45 chrome - seal: NBR XA3 - Ø 160 mm - piston rod stainless steel seal: NBR XA4 - Ø 200 mm - piston rod stainless steel seal: NBR VA3 - Ø 160 mm - piston rod stainless steel seal: FKM/FPM VA4 - Ø 200 mm - piston rod stainless steel seal: FKM/FPM KA3 - Ø 160 mm - piston rod: C45 chrome seal: FKM/FPM KA4 - Ø 200 mm - piston rod: C45 chrome seal: FKM/FPM	from 25 to 2800 mm

DEA - double-acting (non-magnetic), adjustable cushioning

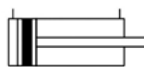
DEMA - double-acting (magnetic), adjustable cushioning

DEM - double-acting (magnetic), cushioned

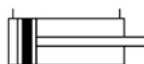
**120**



**121**



**124**



## Actuators



### Mini actuator Ø 6 ÷ 16 mm - CRTC series

- Piston diameter: 6 - 10 - 16 mm
- Standard stroke length: 5, 10, 15 mm
- Threaded connection: M5
- Operation with unlubricated compressed air also possible
- Seals: NBR
- Versions: single-acting
- O-ring seal enables assembly directly in the machine body



### Short-stroke actuator Ø 12 ÷ 100 mm - SSCY series

- Piston diameter: 12 ÷ 100 mm
- Standard stroke length: 5 ÷ 150 mm (depends on a version)
- Cushioning in end-of-stroke positions adjustable on both sides
- Operation with unlubricated compressed air also possible
- Seals: NBR, polyurethane, Viton
- Versions: single or double-acting, with a through-rod, protection against rotation, magnetic position sensors (standard), with a built-in oscillating flange
- Assembly set



### Compact actuator Ø 12 ÷ 100 mm - CMPC series

- Piston diameter: 12 ÷ 100 mm
- Single or double-acting with extended or retracted piston rod, with a through-rod, protection against rotation
- Operation with unlubricated compressed air also possible
- Seals: polyurethane
- Fixing holes spacing according to: ISO 6431-VDMA 24562, NFE 49-004-1 and 2
- Can be mounted in series of 2, 3 or 4 actuators (multi-actuator units)
- Multi-position units (with 2, 3 stages) can be formed
- Assembly set



### Actuator with double piston rod Ø 32 ÷ 100 mm - TWNC series

- Piston diameter: 32 ÷ 100 mm
- Standard stroke length: 25 ÷ 500 mm
- Axial dimensions according to ISO 6431
- Cushioning in end-of-stroke positions adjustable on both sides
- Operation with unlubricated compressed air also possible
- Seals: NBR, polyurethane
- Versions: double-acting, with a single or twin through-rod, magnetic position sensors (standard)
- Assembly set



### Rotary actuator Ø 32 ÷ 100 mm - R1 series

- Piston diameter: 32 ÷ 100 mm
- Standard rotation angle: 90°, 180°, 270°, 360° with mechanical stroke adjustment
- Magnetic position sensors
- Cushioning in end-of-stroke positions adjustable on both sides
- Seals: NBR
- Operation with unlubricated compressed air also possible
- Driving shaft with male pinion or female hole
- Construction: pinion - rack mechanism
- Special versions: on request

## Actuators



### Rotary actuator Ø 12 ÷ 25 mm - R2 series

- Piston diameter: 12 - 16 - 20 - 25 mm
- Standard rotation angle: 90°, 180° with mechanical stroke adjustment
- Magnetic position sensors
- Cushioning in end-of-stroke positions adjustable on both sides (except for the smallest size)
- Compact structure (e.g. dimensions of the smallest model 46x65x28 mm)
- Operation with unlubricated compressed air also possible
- Construction: drive with a double piston with a rack



### Rotary actuator Ø 16 ÷ 40 mm, R3 series

- Piston diameter: 16 - 20 - 22 - 25 - 30 - 40 mm
- Adjustable rotation angle: 0° ÷ 180°
- Magnetic position sensors
- Versions: mechanical control of end-of-stroke positions, with hydraulic cushioning
- Operation with unlubricated compressed air also possible
- Construction: drive with a double piston with a rack



### Rotary actuator Ø 20 ÷ 40 mm - R4 series

- Piston diameter: 20 - 32 - 40 mm
- Adjustable rotation angle: 0° ÷ 180° (accuracy of adjustment ±5°)
- Magnetic position sensors
- Versions: mechanical control of end-of-stroke positions, rotary connection with 4 ports can be installed in a pinion
- Operation with unlubricated compressed air also possible
- Construction: pinion - rack mechanism
- Service life: over 2 million cycles



### Rotary actuator TECNO - R5 series

- Adjustable rotation angle: 0° ÷ 180° (accuracy of adjustment +2°)
- Magnetic position sensors
- Versions: hydraulic cushioning in end-of-stroke positions
- Operation with unlubricated compressed air also possible
- Construction: drive with a double piston with a rack
- Service life: over 2 million cycles
- Weight: 0.53 kg (polymer material)



### Hydraulic brake BRK series for ISO 6431 Ø 40 - 80 mm actuators

- Braking force: 6000 N (standard version), 5000 N (version with valves)
- Speed: 10 ÷ 6000 mm/min
- Seals: NBR
- Versions: with a throttle valve, a check valve, with both valves, with shut-off valve
- Construction: for operation with actuators according to ISO 6431

## Grippers



### Grippers with 2 parallel jaws - P1 series

- Gripper type: two-jaw, with jaws in parallel arrangement
- Construction: double-acting, with magnetic position sensors (on request)
- Piston diameter: 16 - 20 - 32 mm
- Seals: NBR



### Grippers with parallel jaws - P2 series

- Gripper type: two-jaw, with jaws in parallel arrangement
- Construction: double-acting, with magnetic position sensors (except for the smallest size), for internal and external gripping
- Piston diameter: 6 - 10 - 16 - 20 - 25 mm
- Maximum operating frequency: 2 cycle/sec
- Single jaw stroke:  $2 \pm 7$  mm (depends on size)



### Grippers with parallel jaws - P4 series

- Gripper type: two-jaw, with jaws in parallel arrangement, with long stroke
- Construction: double-acting, for gripping bulky objects, for internal and external gripping, with jaws position control (except for the smallest size)
- Piston diameter: 10 - 12 - 16 - 25 - 30 mm
- Single jaw stroke:  $5 \pm 60$  mm (depends on version)
- Maximum operation frequency: 1 cycle/sec



### Grippers with angular jaws - P7 series

- Gripper type: two-jaw, with jaws in angular arrangement
- Construction: double-acting, with magnetic position sensors, and a slot to fit the position sensors in
- Piston diameter: 16 - 20 - 32 - 50 mm
- Gripping force (per jaw at 6 bar):  $30 \pm 225$  N (depends on size)
- Jaw opening angle:  $30^\circ$
- Seals: NBR, polyurethane



### Grippers with angular jaws - P8 series

- Gripper type: two-jaw, with jaws in angular arrangement
- Construction: single-acting, normally open, with magnetic position sensors, corrosion resistant, made of diamagnetic material
- Piston diameter: 32 - 40 - 50 mm
- Gripping force (per jaw at 6 bar):  $25 \pm 80$  N (depends on the size)
- Jaw opening angle:  $8^\circ$
- Service life: over 2 million cycles

## Grippers



### Grippers with angular jaws - P9 series

- Gripper type: two-jaw, with jaws in angular arrangement
- Construction: double-acting, with magnetic position sensors (on request), for internal and external gripping
- Piston diameter: 16 - 20 - 32 mm
- Seals: NBR
- Gripping force (per jaw at 6 bar): 15 ÷ 70 N (depends on size)
- Jaw opening angle: max. 160°, opening angle can be adjusted
- Service life: over 10 million cycles



### Grippers with parallel jaws - P11 series

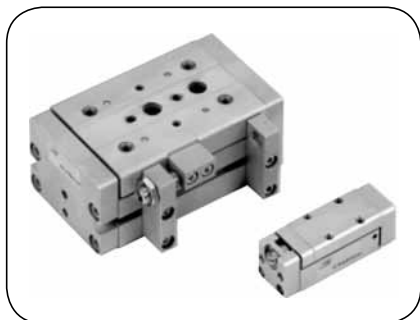
- Gripper type: three-jaw, with jaws in parallel arrangement
- Construction: double-acting, with magnetic position sensors, for internal and external gripping, version with four self-centering jaws available on request
- Piston diameter: 16 - 20 - 25 - 40 - 60 - 80 mm
- Closing force (per jaw at 6 bar): 58 ÷ 1500 N (depends on size)
- Opening force (per jaw at 6 bar): 65 ÷ 1700 N (depends on size)
- Max. operation frequency: 1.5 to 1.2 cycle/sec. (depends on size)

## Guide units



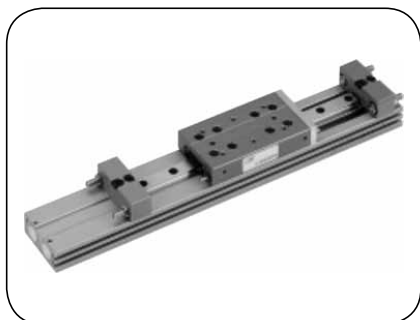
### Guide units - S7 series

- Type: heavy duty guide unit
- Designed for: rigid and stable support for Ø 32 actuators according to ISO 6431, and for Ø 25 rodless actuators, used in the case of very long strokes
- Stroke length: 25 ÷ 2000 mm (on request - 4000 mm)
- Versions: with adjustable stroke stop, hydraulic cushioning, with protection against dust, with position sensors, with interface plates



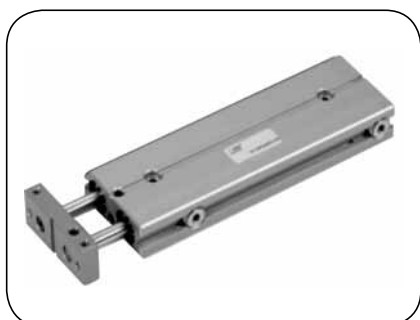
### Guide units - S8 series

- Type: guide with double-acting actuator
- Construction: with in-line ball bearings, with re-circulation ball bearings, with magnetic position sensors
- Piston diameter: 8 ÷ 40 mm
- Stroke length: 25 ÷ 2000 mm (on request - 4000 mm)
- Versions: with adjustable stroke stop, hydraulic cushioning, with adjustable pneumatic cushioning
- Operation with unlubricated compressed air also possible



### Guide units - S9 series

- Type: ball guide with double-piston drive
- Construction: double-acting, with magnetic position sensors
- Piston diameter: 12 - 16 - 20 mm
- Stroke length: 75 ÷ 250 mm (depends on size)
- Max. piston speed: 50 ÷ 500 mm/sec
- Versions: with adjustable stroke stop, hydraulic cushioning
- Operation with unlubricated compressed air also possible



### Guide units - S10 series

- Type: „TWIN“ double-acting actuator
- Construction: with magnetic position sensors, with slide or ball bearings
- Piston diameter: 2x12 - 2x16 - 2x20 - 2x25 - 2x30 mm
- Stroke length: 15 to 125 mm (depending on size)
- Max. piston speed: 30 to 100 mm/sec
- Versions: with adjustable stroke stop, hydraulic cushioning
- Operation with unlubricated compressed air also possible



### Guide units - S11 series

- Type: „TWIN“ double-acting actuator
- Construction: with magnetic position sensors, with slide or ball bearings with a double through-rods
- Piston diameter: 2x12 - 2x16 - 2x20 - 2x25 - 2x30 mm
- Stroke length: 25 ÷ 150 mm (depends on size)
- Max. piston speed: 30 ÷ 200 mm/sec
- Versions: with adjustable stroke stop, hydraulic cushioning, with double-sided hydraulic cushioning
- Working medium: compressed air with 20 µm filtration degree



## Guide units



### Guide units - S12 series

- Type: „TWIN“ double-acting actuator
- Construction: with magnetic position sensors, with slide or ball bearings with a double through-rod, compressed air ports at the end plate of the piston rod
- Piston diameter 2x12 - 2x16 - 2x20 - 2x25 - 2x30 mm
- Stroke length: 25 ÷ 150 mm (depends on the size)
- Max. piston speed: 30 ÷ 200 mm/sec
- Versions: with adjustable stroke stop, hydraulic cushioning, with double-sided hydraulic cushioning



### Guide units - S13 series

- Type: rodless actuator with mechanical coupling
- Construction: double-acting, with magnetic position sensors, cushioning in end-of-stroke positions adjustable on both sides
- Piston diameter: 16 - 25 - 32 - 40 mm
- Stroke length: 100 ÷ 5700 mm
- Seals: NBR, Viton (depends on piston speed)
- Exploitation of unlubricated compressed air also possible



### Guide units - S14 series

- Type: rodless TWIN actuator with mechanical coupling
- Construction: double-acting, with magnetic position sensors, cushioning in end-of-stroke positions adjustable on both sides
- Piston diameter: 2x16 - 2x25 - 2x32 mm
- Stroke length: 100 ÷ 5700 mm

# MACHINES AND ACCESSORIES - hose assembly production

## Process of crimping high pressure hose assemblies

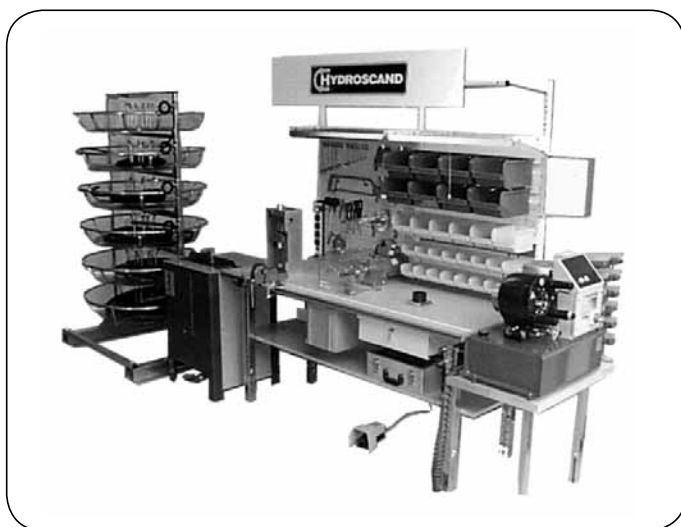
The manufacturing process of flexible hose assembly consists of several stages. Each stage is carried out by the use of special tools/machines. Even in the smallest workshop such a set of equipment makes a technological line described in the table below:

MATERIALS: - hydraulic hoses, - fittings, - ferrules	▶	CUTTING: - cutting machines	▶	SKIVING: - skiving tools	▶	PLACING OF FITTINGS AND FERRULES ON THE HOSE	▶	CRIMPING - hydraulic crimping machines	▶	VERIFICATION - dimension checks after crimping - pressure testing	▶	COMPLETE HYDRAULIC HOSE ASSEMBLIES
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The steps of the hydraulic hose assembly production process:

1. Measuring the length of a hose (several types of tools can be used).
2. Cutting the required length. Cutting is performed on electrically driven cutting machines with smooth or toothed special steel blades.
3. Skiving of external or internal rubber layer of hose skive in a ferrule area - if the hose type requires such an operation. The skiving is performed on skiving machines equipped with special skiving tools that are adjusted to the hose diameter.
4. Inserting ferrules on the hose (manually).
5. Inserting fittings on the hose. It is performed manually or with the use of special tools or equipment.
6. Crimping process. The most important stage of the whole hose assembly process. It is performed on hydraulic crimping machines with a manual, electrical or pneumatic drive.
7. Hose assembly testing. Taking into account customer requirements it may include:
  - measuring outside diameter of the ferrule after crimping,
  - checking the internal "bore collapse" of the fitting after crimping,
  - pressure testing with pressure 1.5 to 2 times higher than the hose working pressure. Performed in special test benches,
  - pressure testing of one hose assembly chosen from a production batch until it bursts. Performed in special test benches.
8. An extra stage of hose assembly process can be introduced - cleaning of the inside of the hose. It is performed on customer request using special equipment and methods e.g. shooting cleaning projectiles through the hose using compressed air or standard methods like water slushing.
9. Marking of the hose assembly to facilitate future recognition. Performed according to particular requirements, usually inscribing information of the producer, date of production and working pressure on the ferrule.

Hose assembly production process described above, refers to the average production line.



### CRITERIA FOR EQUIPMENT SELECTION

The most basic issues we have to consider when planning to purchase equipment for a complete assembly line are as follows:

- size (inside diameter) of manufactured hose assemblies - what is the biggest inside diameter that we need a machine for?
- type of manufactured hoses - e.g. hoses with 1 or 2 braids, non-skived only, etc.
- the amount of hoses that we want to manufacture, e.g. 500 pcs/week,
- production homogeneity level - whether frequent hose type changes are to take place?
- financial resources.

A sample stand for hose assembly production for a small workshop is presented on the left.

### Crimping machines for low pressure hoses



EC-PW-4-8

#### ECKSTEIN PW 4-8

The small crimping device designed to crimp hoses with textile reinforcement with EC type ferrules. Crimping is carried out using a table top vice. Operation production range (internal hose diameter) about 5 ÷ 10 mm.



EC-PWZ

#### ECKSTEIN PWZ

The clamping pliers designed to crimp hoses with textile reinforcement with EC type ferrules. Due to the construction of the pliers it is possible to crimp in places that are not easily accessible. Complete with three sets of dies as a standard.

Operation production range (internal hose diameter) about 5 ÷ 10 mm.

EC-UPS-1



#### ECKSTEIN UPS 1

Manual crimping machine designed to crimp hoses with textile reinforcement with EC type ferrules. Complete with two sets of dies as a standard. A wide range of special purpose dies is also available.

Operation production range (internal hose diameter) about 4 ÷ 18 mm.

OP-TUB-H25



#### TUBOMATIC H25, H25 PI

Crimping machines designed to crimp low pressure hoses. Complete with three sets of dies. Operational production range (internal hose diameter): 10 ÷ 25 mm.

Drive: manual (H25),  
pneumatic - maximum pressure 7 bar (H25 PI).



OP-TUB-H25PI

# MACHINES AND ACCESSORIES - hose assembly production

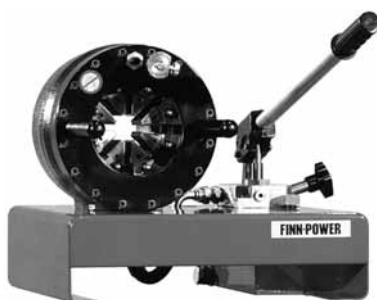
## Hydraulic crimping machines - service

TUBES INTERNATIONAL® is the only authorized distributor of FINN-POWER crimping machines in Poland. We offer technical advice, sale, training, warranty and after warranty service.

**FINN-POWER**  
Crimping since 1973



FP-P16HP



FP-P20HP

### FINN-POWER P16 HP, P20 HP

Hydraulic crimping machines operated by a hand pump are designed for repair workshops, service units, service vans, etc. Robust construction and low weight make it an ideal solution when repairs have to be done on-site. There is an electric indicator showing the crimped diameter for P16HP and mechanical one for P20HP. The P20HPL version with electric indicator is also available. The crimping head of P20HP can be set either on the right or on the left side.



FP-P16AP



FP-P20AP

### FINN-POWER P16 AP, P20 AP

Hydraulic crimping machines operated by a pneumatic pump designed for repair workshops, service units, etc. There is an electric indicator showing the crimped diameter for P16AP and mechanical one for P20AP. Compressed air consumption 570 l/min (P16AP), 400 l/min (P20AP), pressure about 6 ÷ 7 bar.



FP-P20CS



FP-P32CS

### FINN-POWER P20 CS, P32 CS

Crimping machines operated by an electric engine 1.6 kW fed from a battery 12 V (or 24 V). It is an essential piece of equipment in service vans. The crimping diameter is set by turning a 10-turn vernier dial of MS control and shown by an electric indicator when reached. The crimping head can be set either on the right or on the left side.

code	max. internal hose diameter [inch]	crimping diameter range [mm]	max. dies opening [mm]	crimping force [T]	theoretical effectiveness [crimps/hour]	weight [kg]
FP-P16HP	1	10 ÷ 45	+20	95	-	26.00
FP-P20HP	1.1/2 (1.1/4*)	10 ÷ 61	+25	137	-	66.00
FP-P16AP	1	10 ÷ 45	+20	95	-	28.00
FP-P20AP	1.1/2 (1.1/4*)	10 ÷ 61	+25	137	-	59.00
FP-P20CS	1.1/2 (1.1/4*)	10 ÷ 61	+25	137	250	83.00
FP-P32CS	2 (1.1/2*)	10 ÷ 87	+33	200	150	125.00

\* - for 4 braid hoses

## MACHINES AND ACCESSORIES - hose assembly production

### Hydraulic crimping machines - service and production



FP-P20X



FP-P20MSN



FP-P21MS

#### FINN-POWER P20 X, P20 (MS, UC versions), P21 (MS, UC versions)

The P20 crimping machine is a basic solution for service and medium-size production in repair workshops as well as for medium-size plants making hydraulic hose assemblies. Driven by a three-phase electric motor 3 kW (400 V). The P20X crimping machine is a version of the P20 with simplified hydraulic system driven by a one-phase electric motor 1.5 kW (230 V), designed for single-piece production of hose assemblies. The P21 crimping machine is a version of the P20 but with special crimping head construction that facilitates crimping of elbow fittings, recommended for production of large numbers of non-standard fittings.



FP-P32UCN

#### FINN-POWER P32 (MS, UC versions)

Basic crimping machines for service and production in repair workshops as well as for medium-size plants making hydraulic hose assemblies. The crimping head is bigger than the one of the P20 version and allows to crimp hydraulic hoses up to 2" inside diameter. Driven by a three-phase electric motor 4 kW (400 V). A simplified version P32X is also available.



FP-P51UC

#### FINN-POWER P51 (MS, UC versions), P60 (UC)

The biggest of the tabletop machines range. Due to the special crimping head construction (no longitudinal movement of the dies) positioning and crimping of hose assemblies is much easier and accurate. When dies with large crimping range are applied it is possible to crimp industrial hoses up to 4" inside diameter. Driven by a three-phase electric motor 4 kW (400 V). Designed for plants and workshops manufacturing hydraulic hose assemblies with larger diameters.

The P60 crimping machine with its main advantage of large dies opening is ideal for crimping industrial hoses.

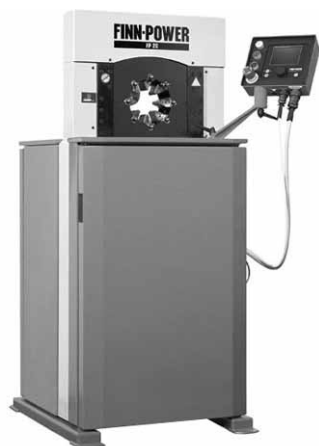
code	max. internal hose diameter [inch]	crimping diameter range [mm]	max. dies opening [mm]	crimping force [T]	theoretical effectiveness [crimps/hour]	weight [kg]
FP-P20X	1.1/2	10 ÷ 61	+25	137	340	110.00
FP-P20MSN-UCN	1.1/2 (1.1/4*)	10 ÷ 61	+25	137	850	157.00
FP-P21MS-UC	1.1/2 (1.1/4*)	10 ÷ 61	+34	137	850	186.00
FP-P32MSN-UCN	2 (1.1/2*)	10 ÷ 87	+33	200	850	205.00
FP-P32X	2 (1.1/2*)	10 ÷ 87	+33	200	230	150.00
FP-P51MS-UC	2.1/2 (4**)	10 ÷ 87	+46	280	720	260.00
FP-P60UC	2.1/2 (4**)	10 ÷ 87	+64	260	720	260.00

\* - for 4 braid hoses

\*\* - for industrial hoses

## Hydraulic crimping machines - series production

FINN-POWER FP crimping machines are intended for series production. They serve the industry for dozens of years by crimping flexible hydraulic hose assemblies as well as big bore industrial hose assemblies.



FP-FP20UC



FP-FP120UCN

### FINN-POWER new generation crimping machines benefits:

- New UC control, with extended set of features (e.g. die position display) ensures more user friendly and effective operation process.
- Operating unit and functional buttons with free placing (according to operator choice).
- Side mounting rack for die sets, side table and other accessories.
- New, improved hydraulic drive directly connected to crimping machine or as a separate unit placed in some distance thus enabling more operational space.
- Durable housing made of resistant plastic panels easy to dismantle without tools. It keeps the machine safe and allows fast maintenance.
- Motor stand-by function.

Depending on the type, FINN-POWER crimping machines FP series are manufactured in steel housing with UC control (FP20) or as a new generation crimping machines in plastic housing with UC control (FP120 (S), FP140 (S) and FP145).

code	max. internal hose diameter [inch]	crimping diameter range [mm]	max. dies opening [mm]	crimping force [T]	theoretical effectiveness [crimps/hour]	motor power [kW]
FP-FP20UC	1.1/2	10 ÷ 61	+68	150	2300	3
FP-FP120UCN	2	10 ÷ 87	+68	280	2400	5.5
FP-FP120SUCN	2		+68	280	3000	7.5
FP-FP140UCN	2.1/2 / 4*	10 ÷ 124	+82	320	2000	5.5
FP-FP140SUCN	2.1/2 / 4*		+82	320	2500	7.5
FP-FP145UCN	2.1/2 / 4*	10 ÷ 124	+82	350	2400	7.5

\* - for industrial hoses

## Hydraulic crimping machines - “heavy duty” production



FP-FP160(165)UC



FP-FP170(175)UC

### FINN-POWER FP160 (165) (UC version)

Crimping machines for series production, especially suitable to crimp big bore hoses (maximum inside diameter of crimped hose 6" - DN150). Operated by an electric 5.5 kW (400 V) motor. The foot pedal is supplied as a standard. The FP160 and FP165 crimping machines have been used for years by manufacturers of high pressure hydraulics, industrial hoses, in shipyards and in the construction of oil rigs.

### FINN-POWER FP170 (175) (UC version)

The FP170 and FP175, „FINN-POWER's Titans", are ideal to crimp hose fittings of large bore hoses (maximum inside diameter of crimped hose 10" - DN250), to reduce diameter of big pipes or join big elements through crimping. The crimping force up to 830 T (FP175).

code	max. internal hose diameter [inch]	crimping diameter range [mm]	max. dies opening [mm]	crimping force [T]	theoretical effectiveness [crimps/hour]	weight [kg]
FP-FP160UC	6	10 ÷ 202	+125	350	1800	2000/225
FP-FP165UC	6	10 ÷ 202	+125	500	1260	2460/225
FP-FP170UC	10	10 ÷ 320	+155	660	1160	4280/245
FP-FP175UC	10	10 ÷ 320	+155	830	1140	4400/310

FP-SP350UC



### FINN-POWER SP 100, 100Z, 350, 350S, 1200 (w. UC)

The special design crimping machine allows the hose to be fed from the side. Enables to crimp elaborately shaped and angled hose assemblies (e.g. in automotive industry).

- hydraulic hose size: up to 1.1/4"
- standard crimping diameter range: 10 to 54 mm
- maximum dies opening: +25 mm
- maximum feeding channel height: 63 mm (SP 1200)
- maximum crimping force: 35 T (SP 350), 120 T (SP 1200)
- theoretical effectiveness: 480 crimps / hour (SP 350), 950 (SP 350S), 420 (SP 1200).

## MACHINES AND ACCESSORIES - hose assembly production

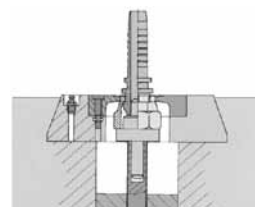
### Hydraulic crimping machines (for low pressure hoses and cables)



FP-CC22UC



FP-NC20UC



These machines are designed to crimp flexible low pressure hose assemblies with fittings that do not demand large crimping force (rubber hoses without any or with textile reinforcement, in steel wire braid, PTFE hoses - crimped with ferrules made of steel or aluminium sheet). High production effectiveness achieved through an optimal force and speed ratio. The crimping machines of this series can also be used to crimp fittings of wires, cables and nuts of hydraulic fittings.

code	hose size [inch]	crimping diameter range [mm]	max. dies opening [mm]	crimping force [T]	theoretical effectiveness [crimps/hour]	weight [kg]	dies type
FP-CC22UC	1.1/4	10 ÷ 54	+25	68	1700	125	CC22, P20
FP-CC24UC	1.1/4	10 ÷ 61	+25	130	1280	178	P20
FP-NC20UC	-	12 ÷ 49	+18	50	2100	220	NC20
FP-NC30UC	-	12 ÷ 63	+26	66	2400	240	NC30
FP-NC40UC	-	12 ÷ 105	+26	93	2700	240	NC40



FINN-POWER crimping machines are widely used in many branches of industry for different purposes except crimping hose assemblies. Those applications include: crimping of cables, electric insulators, reducing pipe diameters, forming metal elements.

For more information regarding crimping machines please contact Technical Department of TUBES INTERNATIONAL®.



## Quick die change system for FINN-POWER crimping machines

Additional accessories available for P type tabletop series of crimping machines are quick die change systems consisting of quick change tool base (QC-Tool Base) with storage place for dies (photo 1) or die set rack (photo 2) and magnetic quick change tool (QC-Tool) that allows to change out a set of dies at once (photo 3). Crimping machines of FP series are supplied with the QC system as a standard.



photo 1

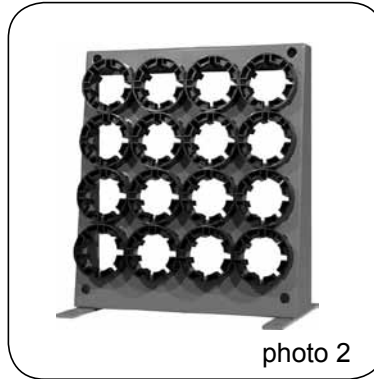


photo 2

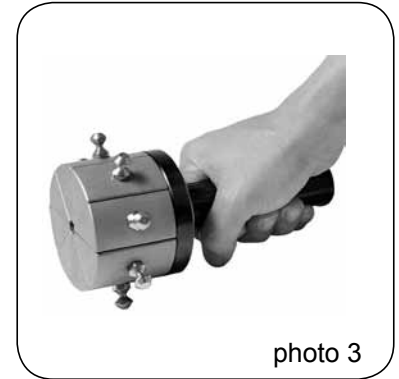
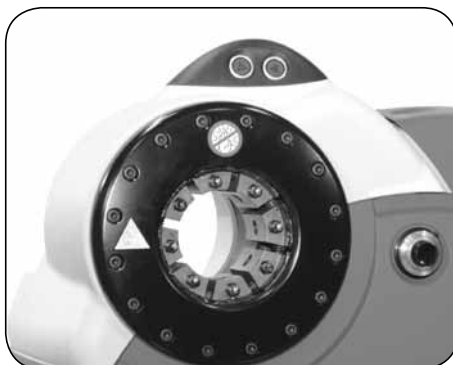


photo 3

code	description
FP-QCT-20X	tool base for P20X with magnetic quick change tool
FP-QCT-20	tool base for P20 / P21 with magnetic quick change tool
FP-RACK-20	die set rack type 20 with magnetic quick change tool
FP-RACK-32	die set rack type 32 with magnetic quick change tool
FP-QCT-51	tool base for P51 / P60 with magnetic quick change tool
FP-QCTN-20MSN	tool base for 20 MS(UC) with magnetic quick change tool
FP-QCTN-32MSN	tool base for 32 MS(UC) with magnetic quick change tool

## Control options of FINN-POWER crimping machines



### MS(N)

New control solution available in new generation of crimping machines P20 MSN and P32 MSN replacing MS and IS control. Apart from two button operation (crimping - opening) the crimping machine can be operated with foot pedal (option), using automatic backstop (option) or in semi-automatic mode. Equipped with motor stand-by function.

## Control options of FINN-POWER crimping machines



### UC

New version of control option used in most of new generation of FINN-POWER crimping machines intended for series production of hose assemblies. It is an upgraded version of VS control option.

#### STANDARD VERSION

##### MOST IMPORTANT FEATURES

- crimping according to set diameter,
- data transfer through USB port,
- manual or automatic operation mode
- graphical user friendly interface,
- indicator of current crimping diameter,
- motor stand-by function,
- control options extensions available, through additional packages.

#### PACKAGE II

##### MULTISTAGE CRIMPING

- crimping according to set diameters or pressure rating,
- includes features of PACKAGE I.



#### PACKAGE I

##### CRIMPING ACCORDING TO SET PRESSURE VALUE

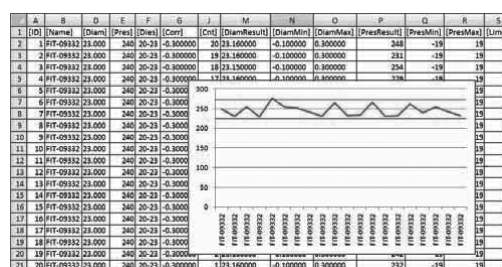
- ideal for crimping hoses with wide tolerance dimensions or materials sensitive to crimping.



#### PACKAGE III

##### PRODUCTION PROCESS MONITORING

- data transfer through USB/FTP connection,
- includes features of PACKAGE II.



## Control options of FINN-POWER crimping machines



### MS

Basic control solution for crimping machines intended for single-piece production in repair workshops. Steering with two push-buttons: closing - opening.

The crimping diameter is set by turning a 10-turn vernier dial situated on the head of a crimping machine.



### IS

IS control solution is ideal for series crimping and single-piece production. The crimping diameter is set by a 10-turn vernier dial placed on the control panel. Adjustable opening diameter of dies. The dies can also be kept closed (for 2 sec.). Operation in the following modes:

- manual (using two push-buttons - as in MS version),
- semi-automatic (one push-button - closing and opening),
- automatic - using automatic backstop placed behind the head. Crimping starts when an assembly with a fitting is pushed against the backstop. Automatic backstop is supplied as a standard.



### VS

VS control solution is designed for full-scale production of various kinds of assemblies. The functions and operation modes are the same as for IS version, with two functions added: crimping diameter can be corrected and the dies can be kept closed for adjustable period of time (up to 5 sec.). The operation is controlled by digital system on the display. The VS control version can store configurations of crimping parameters for immediate recall.

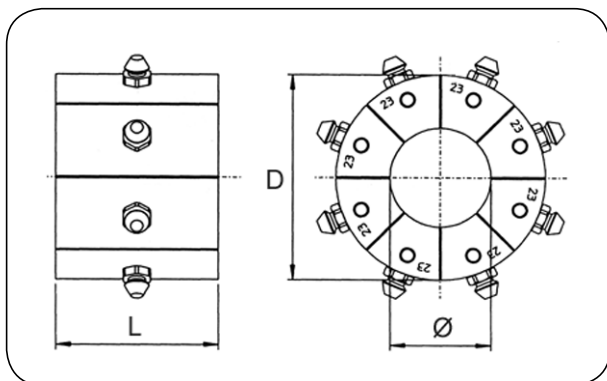
Note:

In 2010 onwards, IS and VS control versions were replaced by UC control.

## Accessories and maintenance materials



code	description
FP-691417	mechanical backstop for P20 / P21 MS
FP-691418	mechanical backstop for P32 MS
FP-691563	steering foot pedal for 145 / 140 / 120 / FP20 / P60 / P51 / P21 / CC24 / CC22
FPM-043167	oil filter insert P20 / P32 / P51
FPM-706821	oil filter insert P20MSN, P32MSN
FP-019302	grease for crimping machines - package 400g



## Crimping dies for FINN-POWER machines

All FINN-POWER crimping machines are adapted to work with exchangeable die sets. These die sets are not supplied with machines as a standard - must be ordered separately according to customer requirements. A wide range of special die sets of virtually any dimension or shape but also marking dies for ferrules are available on request.

\* - long dies, sample code: FP-20-16L.

16 type		
code	crimping diameter Ø [mm]	LxD [mm]
FP-16-10	10 ÷ 12	55x39
FP-16-12	12 ÷ 14	
FP-16-14	14 ÷ 16	
FP-16-16	16 ÷ 19	
FP-16-19	19 ÷ 23	
FP-16-23	23 ÷ 27	
FP-16-27	27 ÷ 31	65x39
FP-16-31	31 ÷ 38	

20 (20L) type			
code	crimping diam. Ø [mm]	LxD 20 type [mm]	LxD 20L type [mm]
FP-20-10	10 ÷ 12	55x84	-
FP-20-12	12 ÷ 14		
FP-20-14	14 ÷ 16		
FP-20-16*	16 ÷ 19		
FP-20-19*	19 ÷ 23		
FP-20-23*	23 ÷ 27		
FP-20-27*	27 ÷ 31	70x84	75x84
FP-20-31*	31 ÷ 36		
FP-20-36	36 ÷ 41	75x84	-
FP-20-41	41 ÷ 47		
FP-20-47	47 ÷ 54	85x84	
FP-20-54	54 ÷ 61		

32 (32L) type			
code	crimping diam. Ø [mm]	LxD 32 type [mm]	LxD 32L type [mm]
FP-32-10	10 ÷ 12	55x99	-
FP-32-12	12 ÷ 14		
FP-32-14	14 ÷ 16		
FP-32-16	16 ÷ 19		
FP-32-19	19 ÷ 22	70x99	
FP-32-22	22 ÷ 26		
FP-32-26	26 ÷ 30		
FP-32-30	30 ÷ 34		
FP-32-34	34 ÷ 39	75x99	
FP-32-39	39 ÷ 45		
FP-32-45	45 ÷ 51	90x99	
FP-32-51	51 ÷ 57		
FP-32-57	57 ÷ 63	100x99	
FP-32-63*	63 ÷ 69	110x99	120x99
FP-32-69*	69 ÷ 75		
FP-32-74*	74 ÷ 80		
FP-32-78*	78 ÷ 87		

140 (140L) type			
code	crimping diam. Ø [mm]	LxD 140 type [mm]	LxD 140L type [mm]
FP-140-84*	84 ÷ 92	110x140	120x140
FP-140-92*	92 ÷ 100		
FP-140-100*	100 ÷ 108		
FP-140-108*	108 ÷ 116		
FP-140-116*	116 ÷ 124		

160 type		
code	crimping diameter Ø [mm]	LxD [mm]
FP-160-084	84 ÷ 92	116x220
FP-160-092	92 ÷ 100	
FP-160-100	100 ÷ 108	
FP-160-108	108 ÷ 116	
FP-160-116	116 ÷ 126	
FP-160-126	126 ÷ 136	
FP-160-136	136 ÷ 146	
FP-160-146	146 ÷ 156	
FP-160-156	156 ÷ 166	
FP-160-166	166 ÷ 178	
FP-160-178	178 ÷ 190	
FP-160-190	190 ÷ 202	

170 type		
code	crimping diameter Ø [mm]	LxD [mm]
FP-170-205	205 ÷ 220	220x220
FP-170-220	220 ÷ 235	
FP-170-235	235 ÷ 250	
FP-170-250	250 ÷ 270	
FP-170-270	270 ÷ 290	
FP-170-290	290 ÷ 320	

## Selection table of dies for crimping machine

crimping machine type	dies type								
	16	20	20L	32	32L	140	140L	160	170
P16	X								
P20, P21		X							
CC22, CC24		X							
P32				X					
P51, P60				X		X			
FP20		X	X						
FP120				X					
FP140				X		X			
FP145				X	X	X	X		
FP160, FP165				X	X			X	
FP170, FP175				X	X			X	X

## Hose cutting machines

OP-CTF1-E



**TF 1/E**

Cutting machine developed to cut hydraulic hoses with 1, 2 and 4 braids of up to 1.1/4" and with 6 braids of up to 1". Used in workshops and service vans.

- maximum hose outside diameter: 60 mm,
- operated by: three-phase 1.1 kW,  
optionally 12 V (battery powered),
- toothed cutting blade: Ø 250 mm (2900 r.p.m.),
- weight: 31 kg,
- can be connected to external fume removal system.

OP-CTF1-ECO



# TF 1/ECO

Cutting machine developed to cut hydraulic hoses with 1, 2 and 4 braids of up to 1" in diameter.

Used in workshops and in small scale series production.

- maximum hose outside diameter: 45 mm,
- operated by: three-phase 0.75 kW (400 V),  
optionally 12 V (battery powered),
- toothed cutting blade: Ø 250 mm (2900 r.p.m.),
- weight: 28 kg,
- can be connected to external fume removal system.

OP-CTF2



**TF 2**

Cutting machine developed to cut hydraulic hoses with 1, 2 and 4 braids of up to 2" and with 6 braids of up to 1.1/2" in diameter.

Used in workshops and in small scale series production.

- maximum hose outside diameter: 75 mm,
- operated by: three-phase 3 kW (400 V),
- toothed cutting blade: Ø 250 mm (2900 r.p.m.),
- weight: 130 kg,
- can be connected to external fume removal system,
- optional accessories: measuring scale table 2.7 m, centring device, hose meter counter, stroke counter.

OP-CTF2-E



**TF 2/E**

Cutting machine developed to cut hydraulic hoses with 1, 2 and 4 braids of up to 2" and with 6 braids of up to 1.1/2" in diameter. Used in workshops and in small scale series production.

- maximum hose outside diameter: 75 mm,
- operated by: three-phase 3 kW (400 V),
- toothed cutting blade: Ø 250 mm (2900 r.p.m.),
- weight: 44 kg,
- can be connected to external fume removal system,
- optional accessories: centring device, hose meter counter, stroke counter.

## Hose cutting machines

OP-CTF3



### TF 3

Cutting machine developed to cut hydraulic hoses with 1, 2 braids of up to 3" in diameter and with 4, 6 braids of up to 2" in diameter. Used for series production.

- maximum hose outside diameter: 100 mm,
- operated by: three-phase 5.5 kW motor (400 V),
- toothed cutting blade: Ø 400 mm (2900 r.p.m.),
- weight: 187 kg,
- can be connected to external fume removal system,
- optional accessories: measuring scale table 2.7 m, centring device, hose meter counter, stroke counter.

Cutting machine also available with pedal equipped pneumatic control of hose being cut.

OP-CTF4



### TF 4

Cutting machine developed to cut hydraulic hoses with 1, 2 braids of up to 3", with 4 braids of up to 2.1/2", with 6" braids of up to 2" and flexible industrial hoses of up to 3" in diameter. Used for series production.

- maximum hose outside diameter: 100 mm,
- operated by: three-phase 5.5 kW motor (400 V),
- toothed cutting blade: Ø 400 mm (2900 r.p.m.),
- stroke counter,
- hose is pneumatically pushed against the blade,
- weight: 240 kg,
- optional accessories: measuring scale table 3 m, centring device, hose meter counter, stroke counter, fume extractor.

OP-CTF5



### TF 5

Cutting machine developed to cut hydraulic hoses with 1, 2, 4 and 6 braids of up to 3" and flexible industrial hoses of up to 4". Used for series production.

- maximum hose outside diameter: 160 mm,
- operated by: three-phase 7.5 kW (400 V),
- toothed cutting blade: Ø 520 mm (2900 r.p.m.),
- stroke counter,
- adjustable cutting speed,
- hose is pneumatically pushed against the blade,
- weight: 480 kg,
- optional accessories: measuring scale table 3 m, hose centring device, hose meter counter, fume extractor.

OP-CTF5-ECO



### TF 5/ECO

Cutting machine developed to cut hydraulic hoses with 1, 2, 4 and 6 braids of up to 3" and flexible industrial hoses of up to 4". Used for series production.

- maximum hose outside diameter: 160 mm,
- operated by: three-phase 7.5 kW (400 V),
- toothed cutting blade: Ø 520 mm (2900 r.p.m.),
- adjustable cutting speed,
- hose is pneumatically pushed against the blade,
- weight: 340 kg,
- optional accessories: measuring scale table 3 m, hose centring device, hose meter counter, stroke counter, fume extractor.

### Hose cutting machines



HY-9085-01-01

#### KNIFE CUT 4-30 BT

A pneumatic cutting machine intended to cut rubber and thermoplastic hoses with textile braid and plastic hoses with external diameter ranging from 4 mm up to 30 mm. Equipped with tools for cutting single and double hoses. Operated with a foot pedal. Ensures clean and straight cut.

- maximum hose outside diameter: 30 mm,
- pneumatically operated 6 bar,
- cutting power 1683 N,
- weight: 14 kg.



HY-9006-01-00

#### MINI CUT 5-50

A cutting machine developed to cut hydraulic hoses with 1 or 2 braids of up to 2" in diameter and with 4 braids of up to 1.1/4" in diameter. Designed for workshops and service vans.

- maximum hose outside diameter: 80 mm,
- operated by: three-phase 3 kW motor,  
12/24 V 1.1 kW motor (battery powered),
- speed of revolutions: 2880 r.p.m.,
- standard cutting blade: Ø 300x3x50 mm - smooth (a toothed blade can also be used),
- weight: 45 kg,
- can be connected to external fume removal system (Ø 63 mm).



HY-9009-00-00

#### MAXI CUT 5-60 OT

A cutting machine developed to cut hydraulic hoses with 1, 2 or 4 braids of up to 2" in diameter.

Designed for series production of hydraulic hose assemblies.

- maximum hose outside diameter: 80 mm,
- operated by: three-phase 5.5 kW motor,
- pneumatically operated min. 6 bar,
- speed of revolutions: 2850 r.p.m.,
- standard cutting blade: Ø 400x4x50 mm - smooth (a toothed blade can also be used),
- hose is pneumatically pushed against the blade,
- three-grade cutting speed,
- weight: 140 kg,
- can be connected to external fume removal system (Ø 100 mm).



HY-9010-00-00

#### POWER CUT 5-75 OT

A cutting machine developed to cut hydraulic hoses with 1 or 2 braids of up to 3" in diameter and with 6 braids of up to 2" in diameter.

Designed for series production of hydraulic hose assemblies.

- maximum hose outside diameter: 90 mm,
- operated by: three-phase 7.5 kW motor,
- pneumatically operated min. 6 bar,
- speed of revolutions: 2850 r.p.m.,
- standard cutting blade: Ø 520x4x38 mm - smooth, (a toothed blade can be also used),
- hose is pneumatically pushed against the blade,
- adjustable cutting speed,
- weight: 210 kg,
- can be connected to external fume removal system (Ø 100 mm).

### Hose cutting machines



FP-CM30

#### **FINN-POWER CM30 (CM30/12V)**

A cutting machine developed to cut hydraulic hoses with 1, 2 braids of up to 2" in diameter (CM30/12V - 1.1/4") and with 4 braids of up to 1.1/4" in diameter (CM30/12V - 3/4").

Widely used in repair shops, service vans and car service stations.

- operated by: three-phase 3 kW motor,  
12 V, 1.1 kW motor (battery powered)
- speed of revolutions: 2750 r.p.m.,
- standard cutting blade: Ø 300 mm,
- can be connected to external fume removal system,
- weight: 50 kg.



FP-CM35

#### **FINN-POWER CM35**

A cutting machine developed to cut hydraulic hoses with 1 and 2 braids of up to 2" in diameter and with 4 braids of up to 1.1/4" in diameter.

Used in repair shops and for small series production.

- operated by: three-phase 3 kW motor,
- speed of rotation: 2750 r.p.m.,
- standard cutting blade: Ø 300 mm,
- can be connected to external fume removal system,
- weight: 60 kg.



FP-CM91

#### **FINN-POWER CM91**

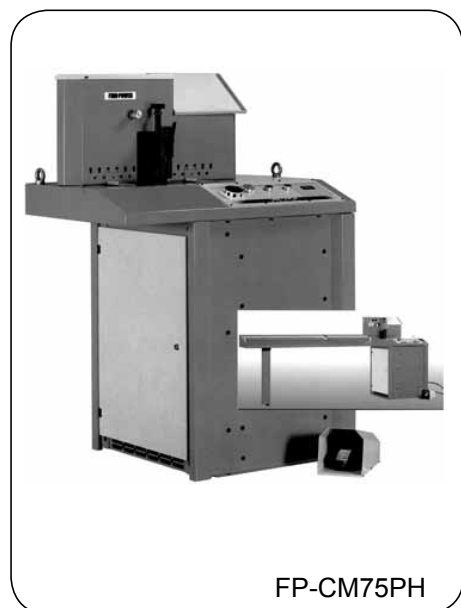
A cutting machine developed to cut hydraulic hoses with 1, 2, 4 and 6 braids of up to 3" in diameter.

Used for series production.

- operated by: three-phase 11 kW motor,
- speed of revolutions: 2900 r.p.m.,
- standard cutting blade: Ø 650 mm,
- electric control,
- adjustable cutting speed,
- stroke counter,
- optional accessories: a measuring scale table to measure hose length, fume extractor, engine brake.



## Hose cutting machines



### FINN-POWER CM75 PH

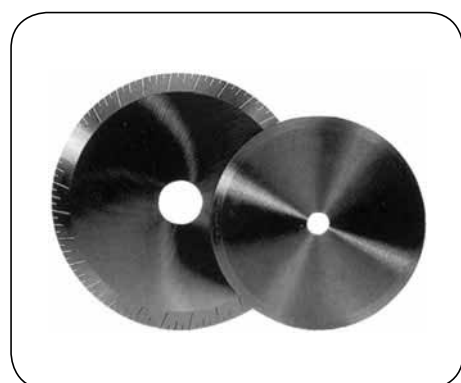
CM 75 PH machine is designed to cut hydraulic hoses with 1, 2 or 4 braids of up to 2" in diameter.

Used for series production of hydraulic hose assemblies.

- maximum hose outside diameter: 80 mm,
- operated by three-phase 7.5 kW motor,
- speed of revolutions: 2840 r.p.m.,
- standard cutting blade: Ø 520x4x38 mm - toothed blade (smooth blade can be used as well),
- hose is pneumatically pushed against the blade,
- adjustable cutting speed,
- weight: 270 kg.

A measuring scale table to measure hose length (2 meter long or with extension module - 4 m) and a fume extractor can be installed as additional equipment.

code	description
FP-CM75PH-S	table to measure hose length
FP-CM75PH-W	fume extractor



### Cutting blades

Blades made of hardened steel. Two types of cutting blades available:

- standard (smooth),
- toothed.

The toothed blades enable to cut at higher cutting speed, extremely suitable for 4 and 6 braid hoses.

code	description
HY-9002-00-02	standard blade 200x3x40 mm
HY-9001-00-92	standard blade 250x3x16 mm
HY-9001-00-02	standard blade 250x3x25 mm
HY-9006-06-01	standard blade 250x3x25.4 mm
HY-9006-00-01	standard blade 250x3x32 mm
HY-9003-00-01	standard blade 300x3x16 mm
HY-9003-00-04	standard blade 300x3x50 mm
HY-9009-01-04	standard blade 400x4x50 mm
FP-055201	standard blade 520x4x38 mm

code	description
HY-9006-01-02	toothed blade TS 250x3x40 mm
HY-9003-01-02	toothed blade TS 300x3x50 mm
HY-9009-01-02	toothed blade TS 400x3x50 mm
HY-9005-00-04	toothed blade TS 520x3x50 mm
FP-12251	toothed blade TF 520x4x38 mm

code	description
HY-9006-01-05	adapter - ring 40x25.4 mm
HY-9006-01-06	adapter - ring 40x32 mm
HY-9005-01-07	adapter - ring 50x32 mm
HY-9005-01-04	adapter - ring 50x38 mm
HY-9005-01-05	adapter - ring 50x40 mm

## Skiving machines for hydraulic hoses



FP-FS50

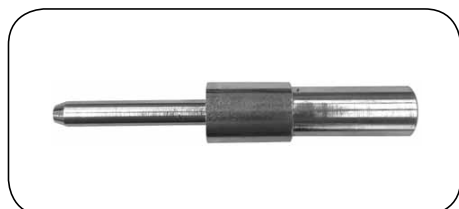
### FS50

FINN POWER skiving machine is intended for skiving either external or internal rubber layer of the hydraulic skivable hoses in the diameter range 3/16" ÷ 2". Suitable for single-item and series production of hydraulic hose assemblies. The machine is equipped with a foot pedal as a standard which controls operation (switch on/off) and with a manual switch to change the direction of rotation. Driven by three-phase motor 0.75 kW. Weight 34 kg.

The machine comes with a blade holder and with two cutting blades (for external skiving) as a standard. The depth of skiving is adjusted by a special mechanism, with a knob. FS50 skiver is compatible with external skiving mandrels type FSE and internal skiving mandrels type FSI (to be ordered separately). A separate tool rack type FS-RACK is also available (to be ordered separately).

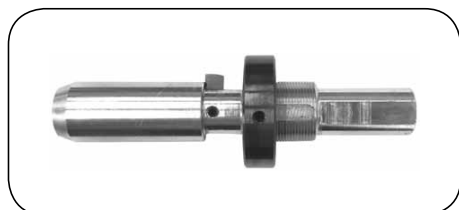


FP-FS-RACK



### FSE

External skiving mandrels designed for skiving the external rubber layer of hydraulic skivable hoses. Suitable for FINN POWER FS50 tool rack.



### FSI

Internal skiving mandrels designed for skiving the internal rubber layer of hydraulic skivable hoses. As a standard the mandrel is supplied with a skiving blade, a ring to adjust the skive length and safety screws. Suitable for FINN POWER FS50 tool rack.

code	description
FP-FSE-03	external skiving mandrel 3/16"
FP-FSE-04	external skiving mandrel 1/4"
FP-FSE-05	external skiving mandrel 5/16"
FP-FSE-06	external skiving mandrel 3/8"
FP-FSE-08	external skiving mandrel 1/2"
FP-FSE-10	external skiving mandrel 5/8"
FP-FSE-12	external skiving mandrel 3/4"
FP-FSE-16	external skiving mandrel 1"
FP-FSE-20	external skiving mandrel 1.1/4"
FP-FSE-24	external skiving mandrel 1.1/2"
FP-FSE-32	external skiving mandrel 2"

code	description
FP-FSI-08	internal skiving mandrel 1/2"
FP-FSI-10	internal skiving mandrel 5/8"
FP-FSI-12	internal skiving mandrel 3/4"
FP-FSI-16	internal skiving mandrel 1"
FP-FSI-20	internal skiving mandrel 1.1/4"
FP-FSI-24	internal skiving mandrel 1.1/2"
FP-FSI-32	internal skiving mandrel 2"

### Skiving machines for hydraulic hoses



HY-9020-00-05

#### SKALMAN

Very simple manually operated device designed to skive down external or internal rubber layer of skived hydraulic hoses in a diameter range from 3/16" to 2".

It is irreplaceable in any workshops manufacturing hydraulic hose assemblies.

For application with EST, IST type tools. Mounted in a vice. Weight 4 kg.



HY-9020-04-01

#### MIDI SKIVE 5-50B

A machine designed to skive down external or internal rubber layer of skived hydraulic hoses with 1, 2 or 4 braids in a diameter range from 3/16" to 2".

Used for series production of hydraulic hose assemblies. For application with EST, IST type tools.

Driven by three-phase 0.37 kW motor. Weight 35 kg.



HY-9082-03-00  
HY-9082-02-00  
HY-9083-03-00

#### POWER SKIVE 5-50 TWIN SKIVE 5-50 TWIN PUSH 5-50

A machine designed for semi-automatic skiving of external or internal rubber layer of skived hydraulic hoses with 1, 2, 4 and 6 braids in a diameter range from 3/16" to 2" and for inserting fittings. Used for full-scale production of hydraulic hose assemblies. Efficiency 400 ÷ 600 pcs/hour. Pneumatically operated, air pressure min. 6 bar.

POWER SKIVE 5-50 (HY-9082-03-00)

- driven by: three-phase 0.75 kW motor,
- for application with EST, IST type tools and tools for fittings inserting

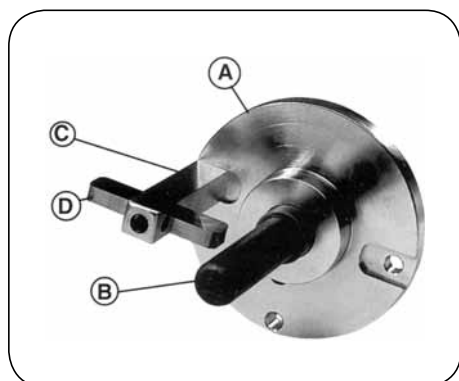
TWIN SKIVE 5-50 (HY-9082-02-00)

- driven by: three-phase 2x0.75 kW motor,
- for application with EST, IST, OST type tools and tools for fittings inserting,
- simultaneous internal and external skiving (reduced operation time).

TWIN PUSH 5-50 (HY-9083-03-00)

- a machine designed only for assembling straight and elbow fittings.

## Skiving machines for hydraulic hoses



### EST

Tool used for external skiving of rubber layer of hydraulic skived hoses. A complete tool consists of a holder (A) with a knife arm (C), a skiving knife (D) and a mandrel (B). Skiving length is adjustable and set by moving the mandrel forwards or backwards for the length required. Skiving depth is set by pulling the knife to the mandrel to the distance required. The mandrel is made of hardened steel, the holder and the knife arm of zinc-plated steel. The skiving knife has four sharp edges. A long knife arm is used when skiving hoses requiring bigger skiving length. For POWER SKIVE machine an EST with two arms and two knives is necessary.

**EST-S tools (short knife arm)**

code	name	skiving length
HY-9022-00-00	holder + knife arm (100 mm)	
HY-9022-00-01	knife arm (100 mm)	
HY-9022-00-03	skiving knife	
HY-9022-02-03	mandrel 3/16"	23 ÷ 37 mm
HY-9022-00-04	mandrel 1/4"	23 ÷ 37 mm
HY-9022-00-05	mandrel 5/16"	23 ÷ 40 mm
HY-9022-00-06	mandrel 3/8"	23 ÷ 46 mm
HY-9022-00-08	mandrel 1/2"	23 ÷ 46 mm
HY-9022-00-10	mandrel 5/8"	23 ÷ 65 mm
HY-9022-00-12	mandrel 3/4"	23 ÷ 65 mm
HY-9022-00-16	mandrel 1"	23 ÷ 65 mm
HY-9022-01-20	mandrel 1.1/4"	23 ÷ 60 mm
HY-9022-01-24	mandrel 1.1/2"	23 ÷ 60 mm

**EST-L tools (long knife arm)**

code	name	skiving length
HY-9022-01-00	holder + knife arm (125 mm)	
HY-9022-00-02	knife arm (125 mm)	
HY-9022-00-03	skiving knife	
HY-9022-00-16	mandrel 1"	40 ÷ 75 mm
HY-9022-01-20	mandrel 1.1/4"	45 ÷ 85 mm
HY-9022-01-24	mandrel 1.1/2"	45 ÷ 85 mm
HY-9022-01-32	mandrel 2"	45 ÷ 85 mm



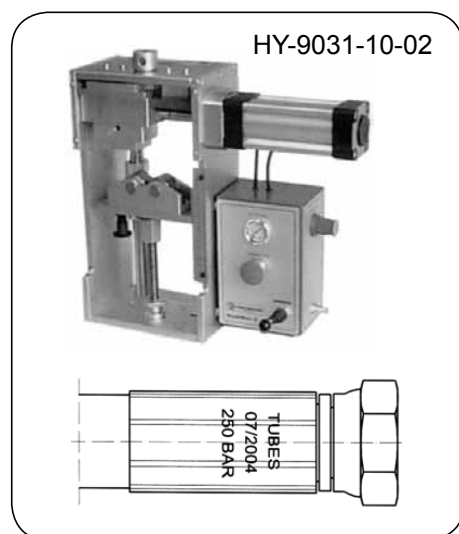
### IST

Tool used for internal skiving of rubber layer of multi-braid hoses with 3 to 6 reinforcement layers. Internal skiving is necessary when assembling INTERLOCK fittings. A complete IST tool consists of a special skiving knife and a slidable mandrel. Skiving length is adjustable between 5 and 35 mm and set by moving the mandrel forwards or backwards for the length required. Skiving depth is adjustable between 1 and 6 mm by setting the height of the skiving knife. IST is made of hardened steel. The skiving knife is adjusted to one or two sizes of skiving tools and is not included in the tool (ordered separately).

code	description
HY-9025-15-06	skiving tool IST 3/8"
HY-9025-15-08	skiving tool IST 1/2"
HY-9025-15-10	skiving tool IST 5/8"
HY-9025-15-12	skiving tool IST 3/4"
HY-9025-15-16	skiving tool IST 1"
HY-9025-15-20	skiving tool IST 1.1/4"
HY-9025-15-24	skiving tool IST 1.1/2"
HY-9025-15-32	skiving tool IST 2"

code	description	IST
HY-9025-01-05	skiving knife 5 mm	3/8"
HY-9025-01-06	skiving knife 6 mm	1/2"
HY-9025-01-08	skiving knife 8 mm	5/8", 3/4"
HY-9025-01-10	skiving knife 10 mm	1", 1.1/4"
HY-9025-02-10	skiving knife 10 mm (long)	1.1/2", 2"

## Hose assemblies marking equipment

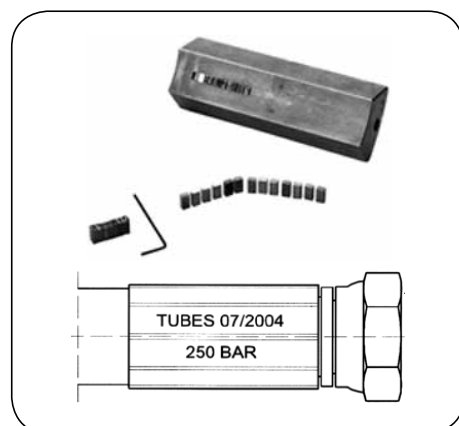


### MARKMAN II

A machine designed to mark ferrules of hydraulic hoses. The ferrules are marked before crimping. They are reeled along an inscription arranged from types in a type holder. Marking in two or three lines holding up to 10 types 3 or 4 mm high. Ferrule outside diameter ranges from 13 mm to 85 mm (3/16" to 2"). The machine can be driven manually with a lever (II-M version, code HY-9031-10-01) or with pneumatic actuator (II P version - in the picture) fed with air under pressure of 6 bar.

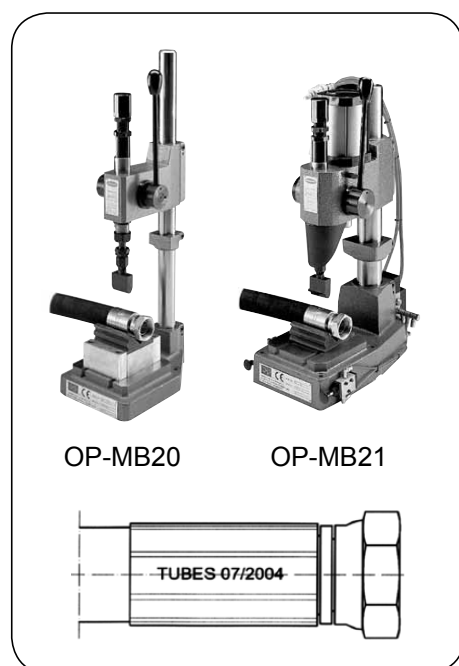
Weight 28 kg (II-M), 35 kg (II-P).

code	description
HY-9031-10-05	QC Adapter
HY-9031-10-04	3 line 4 mm type holder
HY-9031-00-04	4 mm type set



### FINN-POWER marking dies

The application of special marking dies for FINN-POWER crimping machines offers possibility of imprinting characters on a ferrule during crimping operation. There is a groove in the marking die which enables arranging an inscription consisting of 12 up to 16 characters that are 2 or 3 mm high depending on the size of the die. It is possible to mark in two lines when two marking dies in the set are used. A set of marking dies, single marking dies, types and accessories are available for all standard dies with nominal crimping diameter ranging from 14 ÷ 78 mm.



### MB20, MB21

A machine designed for dynamic impressing of an inscription on ferrules of a hose assembly. Three exchangeable types of springs allow to adjust the force of impression. Inscriptions can contain up to 15 types 2 mm high, in one or two lines.

Drive: manual (MB20), pneumatic 7 bar (MB21),

Weight: 40 kg (MB20), 64 kg (MB21),

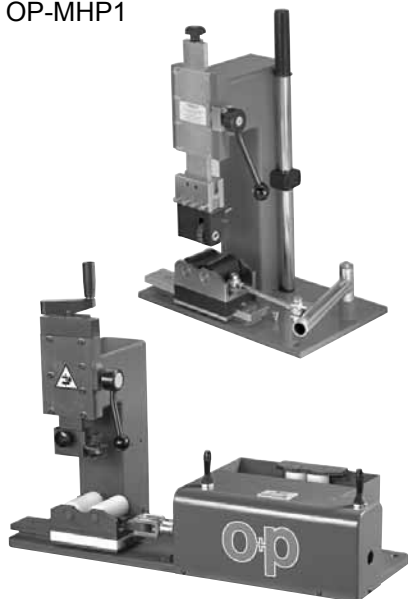
Accessories: see table below (ordered separately).

code	description
OP-MB-PC34	1 line type holder
OP-MB-PC34001	2 line type holder
OP-MB-CASE	2 mm type set

In order to make optimal selection of machines and marking units, please contact Technical Department of TUBES INTERNATIONAL®.

## Hose assemblies marking equipment

OP-MHP1



OP-MHP1-P

### MARKER HP1, HP1 P

A machine for dynamic impressing of an inscription on ferrules of a hose assembly up to 2" in diameter. Equipped with one line type holder that can include up to 16 characters 3 mm high.

Driven by: hand operation (HP1),  
pneumatically operated max. 6 bar (HP1 P).

Weight: 26 kg (HP1), 50 kg (HP1 P).

Accessories (to be ordered separately):

code	description
OP-MHP-PC2	2 line type holder
OP-MHP-CASE	set of characters
OP-MHP-NUM	type holder with 3 rolls
OP-MHP-PP	pneumatic pedal

OP-MHP-PC2



OP-MHP-NUM



OP-MHP-PP



## Machines for inserting fittings



OP-INSERT-02P

### INSERT - 02P

A machine designed to insert fittings on hydraulic hoses up to 2" in diameter. The use of INSERT-02P in production process reduces the time needed for assembly.

- drive and operation: pneumatic 7 bar,
- hose mounting: pneumatic,
- weight: 95 kg.

Tools for fitting inserting are ordered separately.

code	description
OP-INS-02PSET	set of tools for fitting inserting for 2"

## Tools for hose pin pricking



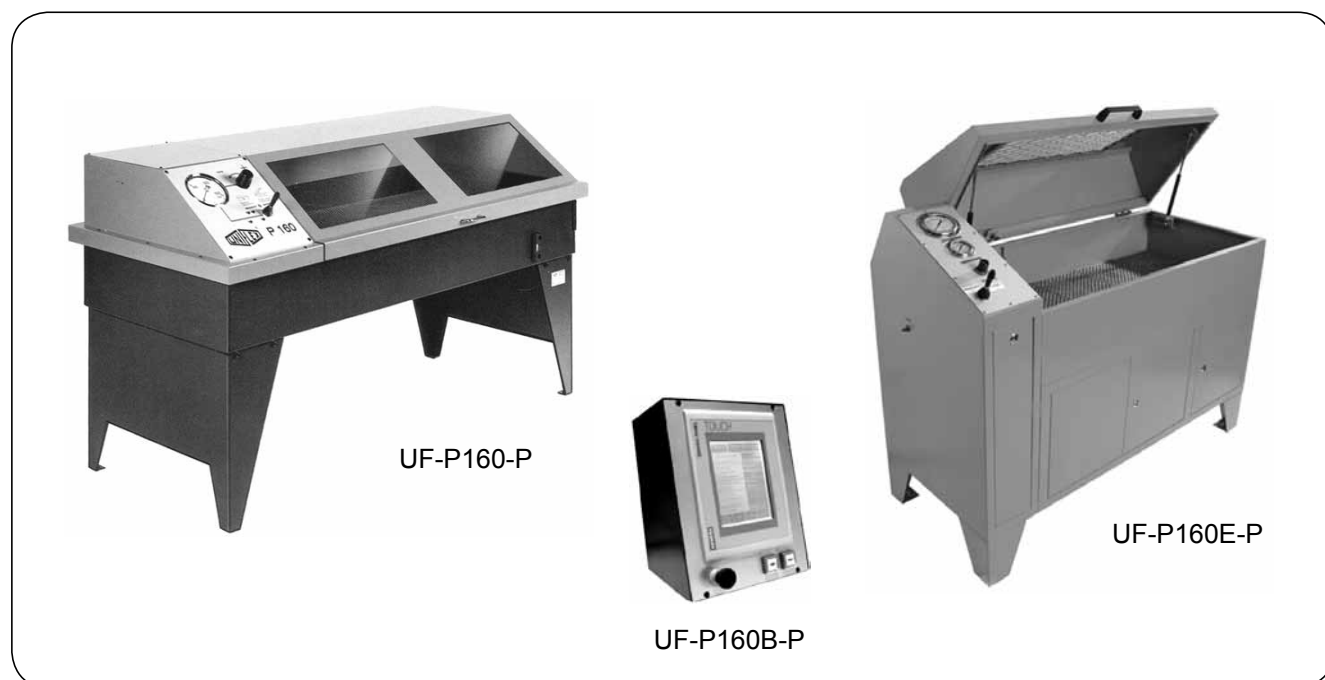
OP- PRT-1080

### PRT 1080

A manually operated tool designed for pricking hoses from 3/8" up to 3" diameter. The distance between rollers is set with a hand crank.

- can be mounted on a base,
- rolls operating range from 10 mm to 80 mm,
- weight 11 kg.

## Test benches for hydraulic assemblies testing P 110, P 160, P 160E



The test bench designed to test hydraulic hose assemblies with static pressure. The machine used in workshops allows to carry out a final inspection of the quality of manufactured assemblies.

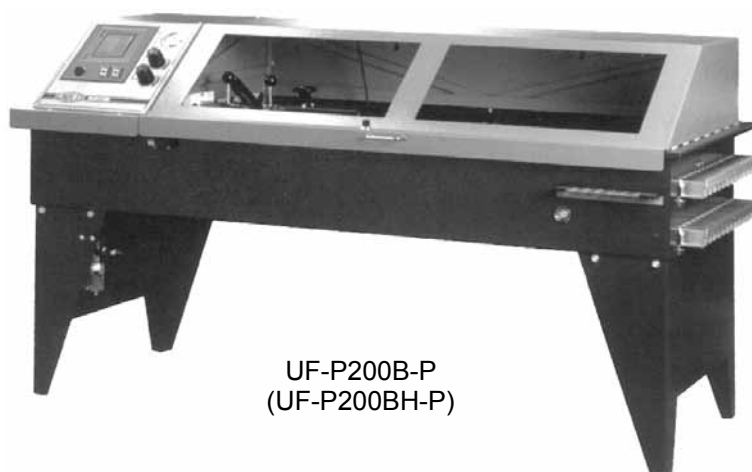
### Characteristics:

- lockable testing tank with safety system consuming pressure when the tank is being opened,
- closed system tank of testing fluid with 100 l (P160), and 25 l (P160E),
- testing fluid: anticorrosive, safe and environment-friendly water-oil emulsion,
- testing capability: flexible assemblies (also in coils), rigid assemblies and other hydraulic components (valves, cylinders, etc.),
- assemblies that are to be tested are attached to the test benches using STECKO adapters,
- electronic control of P160B version enables printing out test reports, storing and data processing.

parameters	machine code		additional accessories and options	code
	UF-P160-P (UF-P160B-P)	UF-P160E-P		
test pressure [bar]	120 ÷ 1300		STECKO adapter set - metric (DN4 ÷ DN12)	UF-405901
drive	pneumatic-hydraulic intensifier		STECKO adapter set - imperial (1/4" ÷ 3/4")	UF-405902
flow [l/min]	1.1		anticorrosive additive 10 l	UF-EM10L
air operation	7 bar, 20 NI/min		filter (without filter cartridge)	UF-600901
testing tank dimensions [mm]	1590x795x370	1200x600x500	filter cartridge 5 µm	UF-6004
bench dimensions [mm]	2210x950x1325	1400x600x1200	filter cartridge 12 µm	UF-6005
weight (empty) [kg]	210		assembly cleaning unit (P 160)	UF-405903
standard accessories	service manual, suction filter 100 µm, air preparation unit		fast filling pump (P 160)	UF-405904
			low pressure testing 20 ÷ 120 bar (P 160)	UF-ND160

Machines UF-P160-P (UF-P160B-P), UF-P160E-P delivered with a set of adapters STECKO (UF-405901, UF-405902) and anti-corrosion fluid (UF-EM10L) as a standard.

### Test benches for hydraulic assemblies testing P 200B, P 200BH

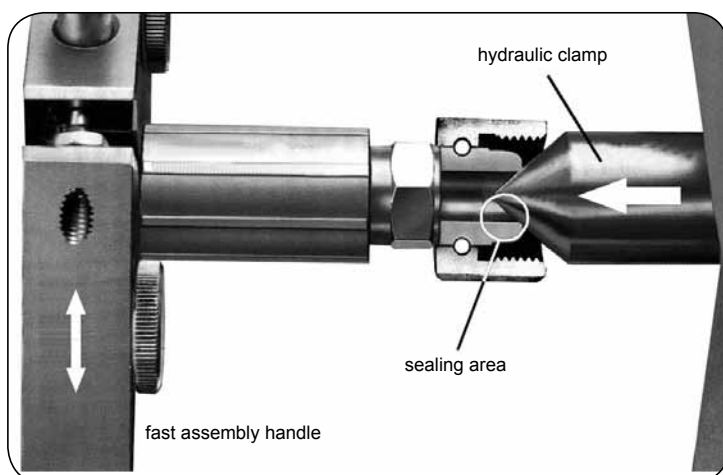


UF-P200B-P  
(UF-P200BH-P)

The test bench designed for testing hydraulic hose assemblies with static pressure. The machine used in series production plants allows to carry out final inspection of the quality of manufactured assemblies.

#### Characteristics:

- lockable testing tank with safety system consuming pressure when the tank is being opened,
- closed system of testing fluid with 100 l reservoir capacity,
- testing fluid: anticorrosive, special water-oil emulsion, operation and environment friendly,
- testing capability: flexible assemblies (also in coils), rigid assemblies and other hydraulic components (valves, cylinders, etc.),
- assemblies to be tested are placed in the test chamber, clamped with the patented clamping system and sealed by a hydraulic clamp,
- testing procedure: automatic, with fast filling, venting and automatic emptying of the tested assembly,
- high testing performance: up to 1000 assemblies (DN12, L=800 mm) during 8 hour shift,
- electronic control enables printing out test reports, storing and data processing.



#### The principle of fast assembly mounting system

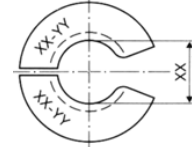
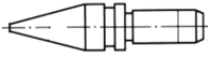
A hydraulic hose assembly is placed between two testing heads and clamped with fast mounting handles. The edge of a ferrule leans against a holding plate. The hydraulic system presses sealing cones against the internal edge of a fitting, ensuring perfect sealing of the tested assembly quickly and with no need to apply any screwed adapters.



## MACHINES AND ACCESSORIES - hose assembly production

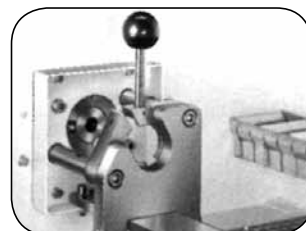
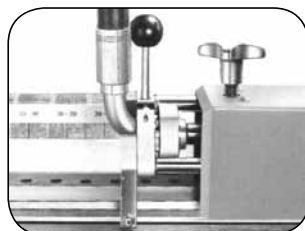
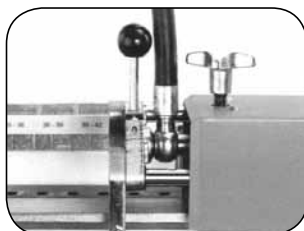
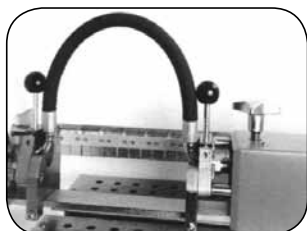
### Test benches for hydraulic assemblies testing P 200B, P 200BH



parameters	machine code		additional options and accessories	code
	UF-P200B-P	UF-P200BH-P		
test pressure [bar]	120 ÷ 1300	120 ÷ 3000		
drive	pneumatic-hydraulic intensifier		holding plate with clamping diameter XX from 8 to 42 mm (12 pcs.)	UF-HS400-..... 
flow [l/min]	1.1			
fast filling pump [l/min]	4.5			
air operation	7 bar, 20 NI/min		sealing cones (6 pcs.)	UF-DSP400-..... 
electric power supply	400 V, 0.38 kW		blind sealing cones (3 pcs)	UF-BDSP400-.....
testing tank dimensions [mm]	1590x795x370		sealing plate (120°)	UF-DS400-1
bench dimensions [mm]	2210x950x1325		low pressure testing 20 ÷ 120 bar	UF-ND200
weight (empty) [kg]	210		anti-corrosion liquid 10 l	UF-EM10L
standard accessories	service manual, suction filter 100 µm, air preparation unit			

Machines UF-P200B-P, UF-P200BH-P delivered with a set of holding plates (UF-HS400-...), sealing cones (UF-DSP400-..., UF-BDSP400-...), sealing plate (UF-DS400-1), and anti-corrosion fluid (UF-EM10L).

#### Examples of practical application of fast assembly system in P200B (P200BH) machine



## MACHINES AND ACCESSORIES - hose assembly production

### Test benches for hydraulic assemblies testing BC1200 ECO, BC1200 E, BC1200 EES



BC1200 ECO



BC1200 E

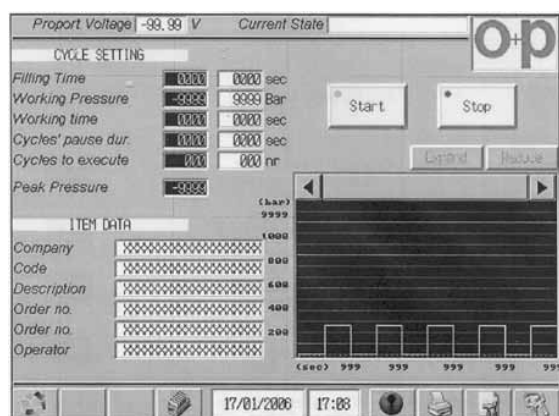


BC1200 EES

Test benches are designed to check hose assemblies, small actuators and other units of pressure hydraulics with static and pulsating pressure.

BC1200 ECO - a compact machine designed to test hose assemblies, manually controlled and pneumatically driven (no electronic elements). A porting block is equipped with a special quick release coupling that facilitates connection of a tested hose assembly in the small chamber of a machine.

BC1200E test bench - both ends of a tested hose assembly are attached to the porting blocks on the left wall of a test tank. Filling and testing processes are manual - by shifting the valves and pressure regulator. Pressure impulses are generated manually - by shifting the valve.



BC1200 EES test bench - equipped with two porting blocks, one is fixed and the other sliding so it can adjust to the length of a tested hose assembly. Filling and testing processes are automatic - according to a test program that is set on the touch pad (testing time and pressure; when tested with pulsating pressure: maximum pressure and time, pause time, number of cycles to go). Test reports can be printed out on a printer that can optionally be ordered with BC1200 EES test bench.

parameters	machine code		
	OP-BC1200 ECO	OP-BC1200 E	OP-BC1200 EES
test pressure [bar]	30 ÷ 1200	100 ÷ 1200	
drive	pneumatic intensifier	electric hydraulic pump, hydraulic intensifier 1:10	
operated by	-	400 V, 50 Hz, 3 phase	
test fluid	hydraulic oil		
oil tank capacity [l]	30	110	
pre-filling flow rate [l/min]	1.5	17	
control	manual	manual	electronic
testing procedure	manual	manual	automatic
number, dimension of connections	1 x 1/4" BSP	3 x 1/4" BSP	9 x 1/4" BSP
internal lightning	-	-	yes
test chamber dimensions [mm]	1200x550x250	2000x830x500	2000x830x300
machine dimensions [mm]	1500x600x1200	2500x875x1200	2500x955x1200
weight (without oil) [kg]	140	619	533

## Racks for hydraulic hoses



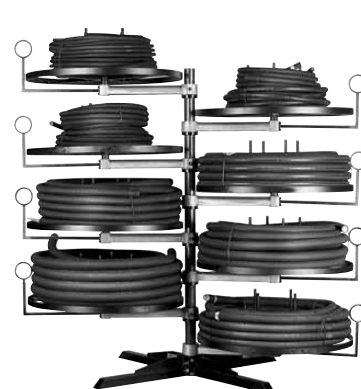
OP-SR-HC



OP-SRB-6



OP-SR6



OP-SR8

parameters	OP-SR-HC	OP-SRB6	OP-SR6	OP-SR8
total loading capacity [kg]	250	1200	660	1900
one arm loading capacity [kg]	-	200	110	240
dimensions [mm]	2020x1280x918	1600x1600x2200	1341x1524x1978	2372x2372x2173
weight [kg]	-	110	84	156



OP-SRAV-01

### AV 01

Hose holder with a manually operated reel for rolling and unrolling of hoses with inside diameter of up to 1".

- max. loading: 240 kg,
- hose holder diameter: 1050 mm,
- dimensions: 1150x1050x1350 mm,
- weight: 45 kg,
- optional accessories: hose and reel guiding device.



OP-SRAV-01EL

### AV 01 EL

Hose holder with an electrically operated reel for rolling and unrolling of hoses with inside diameter of up to 1". Controlled with a foot pedal, emergency switch on a post next to the pedal. This hose holder features a reversing switch (forwards/backwards) and a speed controller 12.5/25 r.p.m.

- max. loading: 240 kg,
- hose holder diameter: 800 mm,
- dimensions: 950x800x1350 mm,
- weight: 88 kg,
- operated by: 400 V, 50 Hz, 3-phase,
- optional accessories: hose and reel guiding device.

## Oil filtering machines



OP-CF1

### CF 1

A filtering trolley used for filling machines and hydraulic systems with oil, as well as for sucking and filtering of oil from tanks of presses, machines and hydraulic systems.

- electric drive 400 V, 0.55 kW,
- pump 39 l/min,
- filter 30  $\mu$ m (25 and 10  $\mu$ m also available),
- suction filter 90  $\mu$ m,
- weight 58 kg.

## Deburring machines (pipe finishing)

OP-RS02



OP-RS01



### S 01, S 02

Machines designed to finish pipe ends after cutting (external and internal burr removal).

parameters	S 01	S 02
maximum pipe diameter [mm]	42	75
voltage [V]	230	400
power [kW]	0.18	0.37
weight [kg]	28	65

## Bending machines for hydraulic pipes



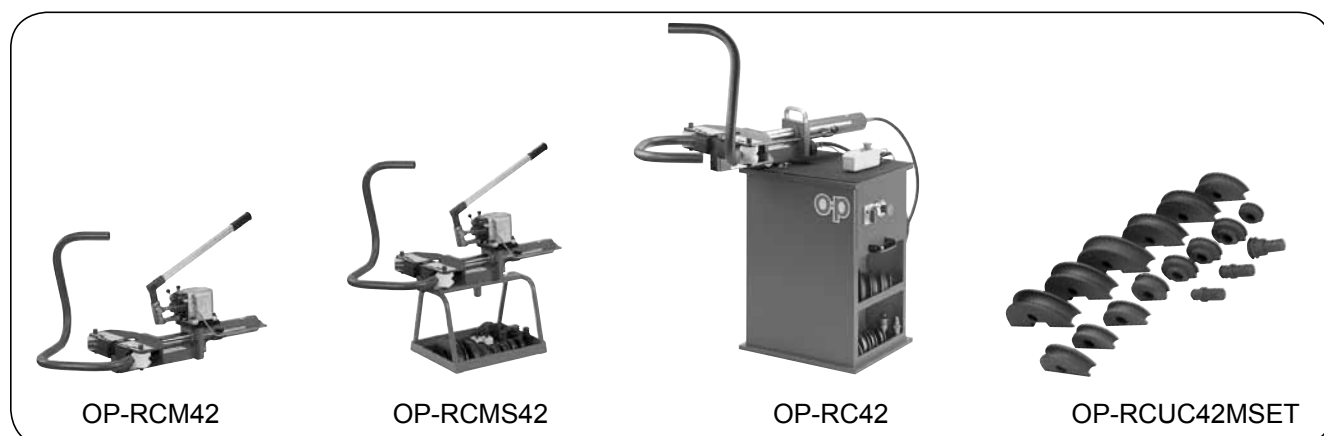
OP-RM18

### M 18

User friendly, manually operated tool developed to bend hydraulic pipes with outside diameter ranging from 6 to 18 mm. Designed for small workshops. Bending rollers included in a set. Mounted in a vice. Weight 6 kg.

picture	bending roller	min. bending radius R [mm]	pipe O.D. [mm]
	6-8	32.75	6x1
		33.75	8x1
	10-12	35	10x1
		36	12x1.5
	14	36	14x1.5
	15	43.5	15x1.5
	16	43.5	16x1.5
	18	51	18x2

## Bending machines for hydraulic pipes



Bending machines for hydraulic pipes with diameter range 6 ÷ 42 mm (pipe wall thickness up to 4 mm). Adjusted to bending tools (ordered separately).

### CM 42 (CMS 42)

Manual bending machine with two-stage hydraulic pump. The CMS 42 version is equipped with a steel base and a box for tools. Weight 40 kg (CMS 42 - 48 kg).

### C 42

A bending machine equipped with electric drive for hydraulic system (400 V, 1.1 kW). A limit switch facilitates series production. Weight 100 kg.

## Bending tools

A set of bending tools CUC42MSET for machines: C 42, CMS 42, CM 42, MINI CENTER, CENTER JUNIOR. The set consists of bending rollers for metric hydraulic pipes of outside diameter 6, 8, 10, 12, 14, 15, 16, 18, 20, 22, 25, 28, 30, 32, 35, 38 and 42 mm. Single parts of the set and tools for pipes in inch-sizes are also available (check the table below).

picture	roller code	pipe O.D [mm]	min. bending radius R [mm]	bending angle	A [mm]	B [mm]
	set of bending tools for metric hydraulic pipes RCUC42MSET					
	OP-RCUC42M06	6	15	170°	60	70
	OP-RCUC42M08	8	16.5	170°	60	70
	OP-RCUC42M10	10	27.5	170°	70	115
	OP-RCUC42M12	12	32.7	170°	80	120
	OP-RCUC42M14	14	46	170°	110	180
	OP-RCUC42M15	15	46	170°	110	180
	OP-RCUC42M16	16	48	170°	110	180
	OP-RCUC42M18	18	48	170°	110	190
	OP-RCUC42M20	20	66	160°	140	230
	OP-RCUC42M22	22	66	160°	140	240
	OP-RCUC42M25	25	81.5	160°	170	270
	OP-RCUC42M28	28	81	160°	180	300
	OP-RCUC42M30	30	98.5	150°	220	300
	OP-RCUC42M32	32	101	150°	220	300
	OP-RCUC42M35	35	125.5	120°	250	440
	OP-RCUC42M38	38	116	120°	250	440
	OP-RCUC42M42	42	126	120°	250	440
	set of bending tools for imperial hydraulic pipes					
	OP-RCUC42P01	1/8"	27.5	170°	70	115
	OP-RCUC42P02	1/4"	46	170°	110	180
	OP-RCUC42P06	3/8"	48	170°	110	180
	OP-RCUC42P08	1/2"	66	160°	140	240
	OP-RCUC42P12	3/4"	81	160°	180	300
	OP-RCUC42P16	1"	125	120°	250	440
	OP-RCUC42P20	1 1/4"	126	120°	250	440

## Hydraulic pipe bending machines



OP- RC50ES

### C 50 ES

Semi-automatic device designed to bend hydraulic pipes with electrically powered hydraulic pump. Design and principle of operation are based on bending a pipe around bending rollers. Electronic control panel allows high precision bending. Upon pressing "START" button on control panel, the machine starts bending a pipe by pre-determined angle with no interference from operator. Version with double foot-operated pedal with safety switch available as an option. Bending rollers around which pipes are bent to be ordered separately (18 sizes).

- bending:  $\varnothing 6 \div 50$  mm (wall thickness 3 mm),
- powered by: 400 V, 50 Hz, 1.1 kW,
- max. bending angle:  $180^\circ$ ,
- $90^\circ$  bending time: 6 s,
- bending angle tolerance:  $\pm 1^\circ$ ,
- control: electronic,
- weight: 173 kg,
- optionally powered by: 220 V.

## Bending rollers

Set of bending rollers - OP-RCUC50DSET designed for OP-RC50ES machine. Consists of 18 sets of bending rollers. Rollers are available separately as well.

picture	code	pipe O.D. [mm]	min. bending radius R [mm]
	OP-RCUC50DSET	set of bending rollers (18 pcs)	
	bending rollers (sold separately)		
	OP-RCUC50D06	6	20
	OP-RCUC50D08	8	22
	OP-RCUC50D10	10	25
	OP-RCUC50D12	12	25
	OP-RCUC50D14	14	35
	OP-RCUC50D15	15	35
	OP-RCUC50D16	16	40
	OP-RCUC50D18	18	40
	OP-RCUC50D20	20	50
	OP-RCUC50D22	22	50
	OP-RCUC50D25	25	65
	OP-RCUC50D28	28	75
	OP-RCUC50D30	30	90
	OP-RCUC50D32	32	90
	OP-RCUC50D35	35	95
	OP-RCUC50D38	38	95
	OP-RCUC50D42	42	115
	OP-RCUC50D50	50	135

## Multifunctional machines for hydraulic pipe processing



### MINI CENTER

A multifunctional machine designed to process hydraulic pipes 6 ÷ 42 mm (wall thickness to 4 mm).

Functions:

- bending,
- deburring,
- pre-assembly of cutting rings DIN 2353,
- pipe flaring JIC 37°.

Electric drive 230 V, 1.7 kW.

Weight 183 kg.

**Adjusted to tools for bending, DIN 2353 rings assembly and flaring (ordered separately).**



### CENTER JUNIOR

A multifunctional machine designed to process hydraulic pipes 6 ÷ 42 mm (wall thickness to 4 mm). Functions:

- cutting (to 100 mm),
- bending,
- deburring,
- pre-assembly of cutting rings DIN 2353,
- pipe flaring JIC 37°.

Equipped with a small compressor for pipe cleaning.

Electric drive 230 V, 4.6 kW.

Air-operated 220 l/min.

Weight 262 kg.

**Adjusted to tools for bending, DIN 2353 rings assembly and flaring (ordered separately).**

## Tools for DIN 2353 rings assembly and for pipe flaring (JIC 37°)



Tools for MINI CENTER, CENTER JUNIOR, US 01, US 02, US-FL/01, US-FL/01MAN machines.

code	description
OP-RUNIBSET	set of metric pre-assembling sockets 6 ÷ 42 mm DIN 2353 (20 pcs.)
OP-RUNIP1SET	set of metric pre-assembling plates 6 ÷ 42 mm DIN 2353 (16 pcs.)
OP-RUNIP2SET	set of metric pre-assembling plates DIN 2353 (20 pcs.) for US 02
OP-RPA02	box for DIN 2353 rings mounting tools
OP-RUNISFLSET	set of metric tools for flaring 6 ÷ 42 mm (17 pcs.)
OP-RUSFLBL	flaring block 37°
OP-RPA01	box for flaring tools

## Assembly machines for DIN 2353 rings



OP-RUS015MAN

### US 015MAN

Hand operated tool for pre-assembling of DIN 2353 cutting rings on hydraulic pipes in outside diameter range 6 ÷ 15 mm. Assembled in a vice. Weight 12 kg.

**Adjusted to assembly cones and back-up plates for assembly of cutting rings (ordered separately).**

code	description
OP-RUNIB015SET	Set of metric assembly cones 6 ÷ 15 mm (10 pcs.)
OP-RUNIP015SET	Set of metric back-up plates 6 ÷ 15 mm (6 pcs.)



OP-RUS01

### US 01

Machines for pre-assembling of DIN 2353 cutting rings on hydraulic pipes. Pneumatic drive maximum 6 bar, manual system for setting assembly pressure.

Very easy to operate - starts with one press of the button and no further interference is needed for quick and precise performance. Weight 42 kg.

**Adjusted to assembly tools for cutting rings (ordered separately).**



OP-RUS02

### US 02

Machines for pre-assembling of DIN 2353 cutting rings on hydraulic pipes. The electric drive of hydraulic system (400 V, 0.75 kW), automatic system for setting assembly pressure.

Very easy to operate - starts with one press of the button and no further interference is needed for quick and precise performance. Weight 54 kg.

**Adjusted to assembly tools for cutting rings (ordered separately).**

## Machines for DIN 2353 rings assembly and pipe flaring (JIC 37°)

OP-RUS-FL-01



OP-RUS-FL-01MAN

### US-FL/01, US-FL/01MAN

Machines for pre-assembling of DIN 2353 cutting rings on hydraulic pipes and for flaring of the pipe ends (JIC 37° connecting system). The US-FL/01 version has the electric drive of hydraulic system (400 V, 0.75 kW), manual system for setting operation pressure.

Very easy to operate - starts with one press of the button and no further interference is needed for quick and precise performance. US-FL/01MAN version - manual drive of hydraulic pump.

Weight US-FL/01 - 58 kg.  
Weight US-FL/01MAN - 38 kg

**Adjusted to flaring tools and assembly tools for cuttings rings (ordered separately).**



### Pipe flaring machine (ORFS 90° / JIC 37°)



OP-RUS-FL 9037ECO

#### US-FL 9037 ECO

Machine designed for flaring of pipe ends - 90° (ORFS) and 37° (JIC). Process takes place automatically upon pressing "START" button on control panel. The machine employs cold orbital flaring which ensures smooth wall surface. Flaring by use of special tools adjusted to diameter of pipes to be processed.

Tools (flaring mandrel, dies) to be ordered separately.

- pipe flaring (ORFS 90°):  $\text{Ø } 6 \div 38 \times 5 \text{ mm}$ ,
- pipe flaring (JIC 37°):  $\text{Ø } 6 \div 42 \times 4 \text{ mm}$ ,
- powered by: 400 V, 50 Hz, 2.3 kW,
- weight: 425 kg,
- optionally powered by 220 V.

### Tools for pipe flaring (ORFS 90° / JIC 37°)

Tools designed for pipe flaring on OP-RUS-FL9037ECO machine.



ORFS



JIC



### Cleaning devices for flexible hoses, assemblies and pipes

It becomes more and more important to protect hydraulic systems against contamination. This increase in care is due to the fact that the systems are more advanced and operate at higher speed and lower allowance. The contamination of hydraulic oil reduces effectiveness of the machine, destabilizes its control, causes frequently occurring defects and break-downs that put the machine out of operation.

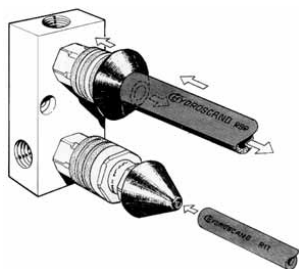
**DID YOU KNOW THAT  
80% OF HYDRAULIC SYSTEM FAULTS  
ARE CAUSED BY  
CONTAMINATION ?**

The requirements concerning the purity of hydraulic oil are specified by ISO 4406 and American NAS 1638 standard. The standards define cleanliness classes of oil according to the amount of contamination of certain volume - the lower the number defining the class, the cleaner the hydraulic oil.

<b>NAS 1638</b>	00	0	1	2	3	4	5	6	7	8	9	10	11	12
<b>ISO 4406</b>	8/4	9/6	10/7	11/8	12/9	13/10	14/11	15/12	16/13	17/14	18/15	19/16	20/17	21/18

#### Hydraulic hoses, assemblies and pipes cleaning methods:

- blowing through with compressed air (does not meet any standards, however very useful),
- shooting cleaning projectiles using compressed air,
- slushing.



HY-9036-01-00

#### MICRO JET 5-50

A simple device designed to clean hoses and pipes with compressed air. There are two plastic nozzles, one is for hoses from 3/16" to 1" and the other for hoses from 1" to 2". When the hose is pressed against the nozzle the valve opens and makes cleaning possible.

- air pressure: min. 6 bar,
- connection to pneumatic installation: 1/2" BSP.



OP-SC

#### SPEEDY CLEAN

A machine for cleaning with special purpose detergent solution under pressure. Designed to clean hoses and hose assemblies.

Ensures obtaining cleanliness class: ISO 4406: 16/13, NAS 1638: 8.

- hose diameter range from 1/4" up to 2",
- air-operated 6 bar - 7 l/min,
- container capacity 35 l,
- operation pressure 60 bar,
- weight 120 kg,
- universal adapter for hoses from 1/4" to 2"
- detergent 30 l (OP-SCQFLUID).

### ULTRACLEAN devices for hose, assembly and pipe cleaning

ULTRACLEAN devices are designed to clean hoses, flexible hose assemblies and pipes for high pressure hydraulics and for other industrial applications. Cleaning is carried out by shooting cleaning projectiles through the hose using compressed air.



**ULTRACLEAN devices and cleaning methods allow to obtain ISO 13/10 hydraulic fluid cleanliness class.**



UC-EL



UC-HL



UC-HLMAX

### EL, HL, HLMAX

A manual device for shooting cleaning projectiles. Diameter range (of hoses):

- EL - 1/8" ÷ 1.1/4",
- HL - 1/8" ÷ 2",
- HLMAX - 1/8" ÷ 3.1/2",

Air-operated about 6 bar (1/2" hose).

Recommended filter 5 µm.

HL, HLMAX are supplied with quick release couplings with rotary plugs. EL is supplied with a quick release coupling.

### BM-1

A tabletop device for shooting cleaning projectiles.

Diameter range (of hoses):

- BM-1- 1/8" ÷ 1.1/4",

Air-operated about 6 bar (1/2" hose).

Efficiency up to 500 assemblies / hour.

A set with 5 µm filter, foot control and 7 nozzles selected according to customer specification.

The PVS module signalling that the cleaning projectile has left the assembly is also available.



UC-BM-1

### ULTRACLEAN devices for hose, assembly and pipe cleaning

#### Set with UC-EL device (economical version)



#### EL7

A device allows cleaning hoses, pipes and assemblies in a diameter range from 1/8" to 1.1/4".

A cleaning set consists of:

- UC-EL cleaning gun with a plug,
- DN12 UC-QRC-C quick release coupling socket with a hose tail,
- 7 standard nozzles:  
NH06, NH10, NH13, NH16, NH19, NH25, NH32,
- UC-CC-LP case.



#### EL7DP

A device allows cleaning hoses, pipes and assemblies in a diameter range from 1/8" to 1.1/4".

A cleaning set consists of:

- UC-EL cleaning gun with a plug,
- DN12 UC-QRC-C quick release coupling socket with a hose tail,
- 7 standard nozzles:  
NH06, NH10, NH13, NH16, NH19, NH25, NH32,
- UC-CC-LP case,
- PC container for catching projectiles,
- set of standard cleaning projectiles:  
P007, P010, P012, P014, P016, P018 - 100 pcs. each,  
P020, P022, P026 - 50 pcs. each,  
P033 - 40 pcs.  
P040 - 30 pcs.

#### Set with UC-HL device



#### HL9-2

A device allows cleaning hoses, pipes and assemblies in a diameter range from 1/8" to 2".

A set consists of:

- UC-HL cleaning gun with a swivel plug,
- UC-QRC-C quick release coupling socket,
- 9 standard nozzles:  
NH06, NH10, NH13, NH16, NH19, NH25, NH32, NH38, NH50,
- UC-AR1 nozzle adapter from 1/8" ÷ 1.1/4",
- UC-CC case.

## ULTRACLEAN devices for hose, assembly and pipe cleaning

### Set with UC-HLMAX device



### HLMAX-1-35

A device allows cleaning hoses, pipes and assemblies in a diameter range from 1/8" to 3.1/2".

A set consists of:

- UC-HLMAX gun with a plug,
- DN12 UC-QRC-RP quick release coupling with a swivel plug,
- UC-NU55-90 general purpose nozzle from 2.1/8" ÷ 3.1/2",
- standard nozzle adapters:  
1/8" ÷ 1.1/4" UC-AR2, 1.1/2" ÷ 2" UC-AR3,
- UC-CC case,

General purpose UC-NU55-90 nozzle does not require an adapter.

### Nozzle adapters



All standard nozzles (sizes up to 2") can be attached to UC-HL and UC-HLMAX devices, however appropriate adapters must be used.

adapter code	nozzle size range	device
UC-AR1	1/8" ÷ 1.1/4"	UC-HL
UC-AR2		UC-HLMAX
UC-AR3	1.1/2" ÷ 2"	

Table for selection of nozzles and projectiles according to a hose diameter:

diameter	nozzle	projectile
3/16"	UC-NH06	UC-P007
1/4"	UC-NH06	UC-P010 or UC-P012
5/16"	UC-NH08	UC-P012 or UC-P014
3/8"	UC-NH10	UC-P014 or UC-P016
1/2"	UC-NH13	UC-P018 or UC-P020
5/8"	UC-NH16	UC-P022
3/4"	UC-NH19	UC-P026
1"	UC-NH25	UC-P033 or UC-P036
1.1/4"	UC-NH32	UC-P040 or UC-P045
1.1/2"	UC-NH38	UC-P050 or UC-P055
2"	UC-NH50	UC-P060 or UC-P065
2.1/2"	UC-NU55-90	UC-P075
3"	UC-NU55-90	UC-P085
3.1/2"	UC-NU55-90	UC-P100

The table above is of informative character.

If a hose was cut with an abrasive disc, use a projectile of a diameter bigger than recommended.

### ULTRACLEAN devices for hose, assembly and pipe cleaning

ULTRACLEAN devices are used to clean:

- hydraulic hoses and hose assemblies during production,
- used hydraulic hoses and hose assemblies,
- pipes while making pressure assemblies,
- pipes in metal constructions (also as protection against corrosion),
- heat exchanger components,
- steam boilers,
- air conditioning systems,
- gun barrels,
- chemical and food industry installations.

### Nozzle types

A wide range of nozzles available allows to use ULTRA CLEAN system to clean hoses, pipes, various types and dimensions of hose assemblies but also couplings of different shapes.



For hoses (UC-NH...) - nozzles for hoses are placed inside the hoses. They can be used for pipes, heavy wall pipes and couplings. It is the most popular type of nozzles.

JIC (UC-NJ...) - nozzles with connection ends adjusted to hose assemblies and pipe systems with JIC female thread connection.

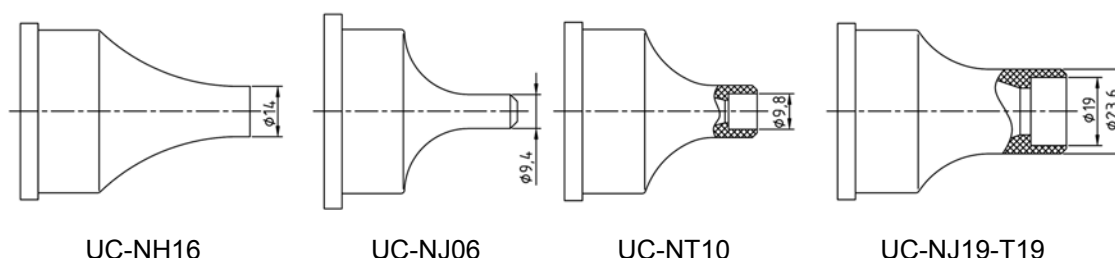
For pipes (UC-NT...) - push-on nozzles. The seal is obtained between a pipe end face and a stop inside the nozzle.

For metric pipes (UC-NP...) - push-on nozzles. The seal is obtained between a pipe end face and a stop inside the nozzle. Adjusted to the external diameter and thickness of metric pipes.

FFORX - nozzles designed for couplings with flat seal and sealing ring.

Big general purpose nozzle - nozzles similar to nozzles for hoses. Designed for diameters ranging from 55 mm (2.1/8") to 90 mm (3.1/2"). A diameter size rises by each 10 mm.

### Nozzle examples

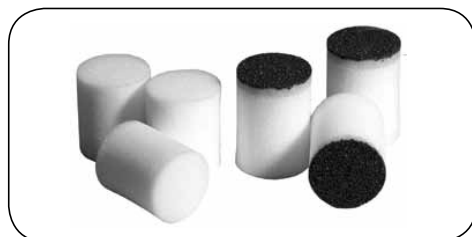


**Use Ultra Clean system to reduce installation shutdowns, extend service life of filters and reduce the risk of premature damage or deterioration of a system and equipment due to impurities !!!**

## ULTRACLEAN devices to clean hoses, pipes and hose assemblies

### Types of cleaning projectiles

Standard cleaning projectiles for the ULTRACLEAN devices are available in diameter range from 2 to 150 mm. The projectiles are shot into hoses, pipes or assemblies under pressure and clean their internal surface. The pressure is necessary as the diameter of projectiles is bigger by 20 ÷ 30% than the diameter of hoses, pipes or assemblies. Note: It is recommended to use the cleaning projectile to remove impurity reminders after the application of abrasive or grinding projectiles. In order to match nozzles with adequate projectiles the tables in a user manual have to be followed or experimentally determined.



- Cleaning** - for hoses and pipes; removes small particles of loose impurities.
- Abrasive** - for hoses, pipes and assemblies wherever a layer of scale, rust or other impurities sediment on the inside.
- Grinding** - pipes and assemblies with thicker layer of impurities, scale and rust.

O.D. [mm]	code			pack [pcs]
	cleaning	abrasive	grinding	
2	UC-P002	-	-	100
3	UC-P003	-	-	100
4	UC-P004	-	-	100
5	UC-P005	-	-	100
6	UC-P006	UC-A006	UC-GR006	100
7	UC-P007	UC-A007	UC-GR007	100
8	UC-P008	-	-	100
10	UC-P010	UC-A010	UC-GR010	100
12	UC-P012	UC-A012	UC-GR012	100
14	UC-P014	UC-A014	UC-GR014	100
16	UC-P016	UC-A016	UC-GR016	100
18	UC-P018	UC-A018	UC-GR018	100
20	UC-P020	UC-A020	UC-GR020	50
22	UC-P022	UC-A022	UC-GR022	50
24	UC-P024	UC-A024	UC-GR024	50
26	UC-P026	UC-A026	UC-GR026	50
28	UC-P028	UC-A028	UC-GR028	40
30	UC-P030	UC-A030	UC-GR030	40
33	UC-P033	UC-A033	UC-GR033	40
36	UC-P036	UC-A036	UC-GR036	30
40	UC-P040	UC-A040	UC-GR040	30
45	UC-P045	UC-A045	UC-GR045	20
50	UC-P050	UC-A050	UC-GR050	20
55	UC-P055	UC-A055	UC-GR055	15
60	UC-P060	UC-A060	UC-GR060	15
65	UC-P065	UC-A065	UC-GR065	10
70	UC-P070	UC-A070	UC-GR070	10
75	UC-P075	UC-A075	UC-GR075	10
80	UC-P080	UC-A080	UC-GR080	10
85	UC-P085	UC-A085	UC-GR085	10
90	UC-P090	UC-A090	UC-GR090	10
95	UC-P095	UC-A095	UC-GR095	10
100	UC-P100	UC-A100	UC-GR100	10
110	UC-P110	UC-A110	UC-GR110	10
120	UC-P120	-	-	10
130	UC-P130	-	-	10
140	UC-P140	-	-	10
150	UC-P150	-	-	10

## CLEAN SEAL system that prevents hose assemblies from dirt

ULTRA CLEAN is the leader in contamination control solutions of flexible hose assemblies and rigid pipes. To fully protect hose assemblies after being cleaned, the producer introduced a new solution - clean seal capsules. This process utilizes heat shrink technology to encapsulate the end of a hose or tube assembly. Such solution eliminates recontamination that occurs when ill-fitting caps and plugs are forced onto assemblies, causing plastic particles to shear off into the hose or tube.



Clean seal capsules leave absolutely no particles or sticky surface. They perfectly protect the hose assemblies or pipes from contamination until they are removed. Removal includes gripping the black pull tab, then ripping the pull tab upwards and finally slipping the clean seal capsule off the hose assembly or pipe. Clean seal capsules are single use and cannot be used again.



### UC-CSS-230V

Clean seal system bench-top capsule applicator suitable to apply clean seal capsules to a hose or tube assembly. Equipped with a timer that ensures that air heater will turn itself off automatically (time frame to be set with accuracy to 1 minute)

Diameter range: from 20 mm to 80 mm of clean seal capsule outside diameter that allows to protect fittings from 1/4" to 2". Oversized shrink tunnel allows to apply multiple hose and pipe assemblies at once.

Electric drive: 230 V / 50/60 Hz.

### UC-HL1910E

Industrial device (heat gun) with adjustable temperature control knob. Can be used with heat diffuser. Electric drive: 230 V / 50 Hz.

### UC-1.5HD, UC-2.0HD

Heat diffuser (fitting) to be assembled on heat gun. Available in two sizes that depend on heat gun nozzle: UC-1.5HD 1.1/2" (38 mm), UC-2.0HD 2" (50 mm). Made of: AISI 304 stainless steel.

### UC-HG-STAND

Flexible stand for heat gun UC-HL1910E equipped with a so called „sucker" that enables installation on any smooth surface. Flexible, user-friendly construction improves comfort of the operator during assembly of clean seal capsules on hose or pipe assemblies.



## Heat shrink capsules

code	dimensions	fitting hex. sizes	code	dimensions	fitting hex. sizes
UC-CSC-2030P	20x30 mm	12 ÷ 18 mm	UC-CSC-3840P	38x40 mm	30 ÷ 36 mm
UC-CSC-2224P	22x24 mm	16 ÷ 21 mm	UC-CSC-4650P	46x50 mm	34 ÷ 44 mm
UC-CSC-2540P	25x40 mm	18 ÷ 23 mm	UC-CSC-5260P	52x60 mm	41 ÷ 50 mm
UC-CSC-2840P	28x40 mm	22 ÷ 26 mm	UC-CSC-5860P	58x60 mm	49 ÷ 56 mm
UC-CSC-3140P	31x40 mm	24 ÷ 29 mm	UC-CSC-6760P	67x60 mm	55 ÷ 65 mm
UC-CSC-3440P	34x40 mm	27 ÷ 32 mm	UC-CSC-8060P	80x60 mm	64 ÷ 78 mm



## CLEAN SEAL protects hose assemblies against dirt

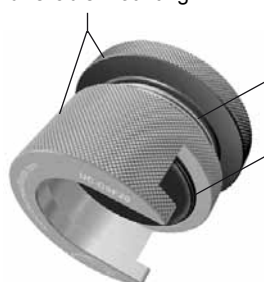
### Clean seal flanges for SAE flange protection

Fast and easy to handle, durable, manually operated device intended to protect hose assemblies with SAE flanges. Protects against contamination during dismantling or machine maintenance, but also directly after assembly cleaning. Another aim of the clean seal flanges is to prevent oil leakage from a hydraulic system when the hose assembly is disconnected. No extra tools are required to attach the device. It must only be pushed on SAE flange fitting. The solution guarantees reliable and tight protection of the hose assembly after dismantling. The clean seal flanges are available in different colours. Each colour corresponds to a particular size for fast and easy size identification.

#### Advantages:

- holds oil in a hydraulic system,
- no tools required for installation,
- prevents oil leakage out to the environment,
- protects a hydraulic system against dirt from the outside,
- faster and easier way of SAE flanges protection compared to standard methods,
- useful, reusable protection.

knurled surface allows a firm grip and reliable mounting



O-ring prevents aluminium surfaces against jamming

O-ring prevents accidental disconnection of both elements

space for spare O-rings

colour-coded aluminium for easy size identification



spanner holes for firmer tightening if required

The devices can be ordered separately or as a set.

table for clean seal flange size identification

code	size	application	colour
UC-CSF-08	1/2"	SAE 3000 SAE 6000 SUPER CAT	silver / black
UC-CSF-10	5/8"		red / black
UC-CSF-12	3/4"		blue / black
UC-CSF-16	1"		green / black
UC-CSF-20	1.1/4"		yellow / black
UC-CSF-24	1.1/2"		orange / black
UC-CSF-32	2"		black / black



### Set UC-CSF-AC

A set of clean seal flanges in the size range from 1/2" ÷ 2". The set consists of:

- 1/2" UC-CSF-08 flange (2 pcs),
- 5/8" UC-CSF-10 flange (2 pcs),
- 3/4" UC-CSF-12 flange (4 pcs),
- 1" UC-CSF-16 flange (4 pcs),
- 1.1/4" UC-CSF-20 flange (4 pcs),
- 1.1/2" UC-CSF-24 flange (2 pcs),
- 2" UC-CSF-32 flange (2 pcs),
- reinforced aluminium case.

### General information

Hose reels are primarily intended to allow fast unwinding of the required length of a hose (flexible hose assembly), which is ready for operation and connected to a supply (of e.g. water, air) via the reel. When its operation is over, the hose is rewound on the hose reel.

#### Advantages of using hose reels:

- enhanced work safety,
- minimized leakage,
- reduced hose wear,
- increased work efficiency,
- improved working environment.

#### Types of hose reel drives:

- Spring driven hose reels: The hose is manually pulled to unwind to the required length and blocked by a ratchet mechanism. The more hose is pulled from the reel, the more the spring is stretched. When a pawl is released, the spring launches automatic rewinding of the hose onto a drum of the hose reel. Guiding the hose in hands secures the process. The spring driven hose reels are widely used, especially for lightweight and short hoses (several dozen of meters, depending on a diameter, limited by the tension and length to which the spring is stretched).



- Hand crank hose reels: A hose is reeled in and out manually by turning a crank attached to a hose reel drum (directly or through a gear). Used for longer hoses mainly (up to several hundreds of meters).

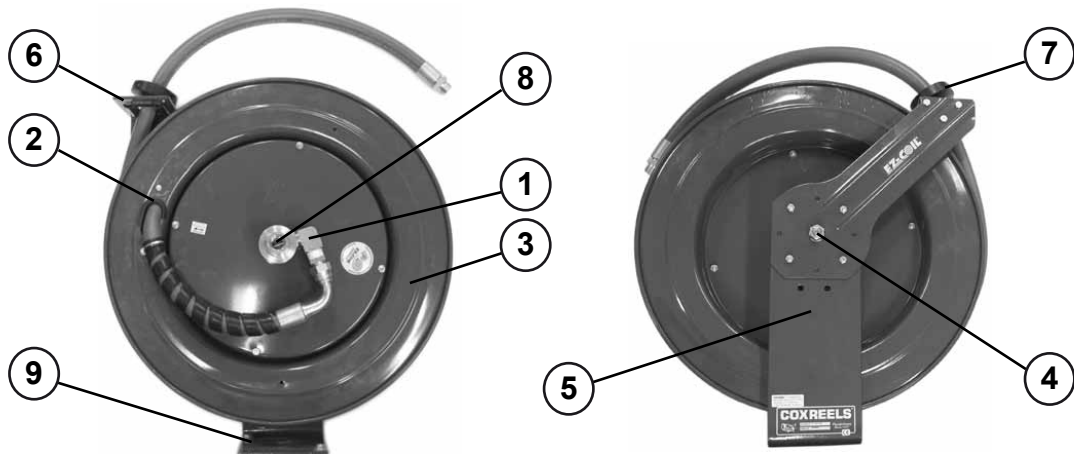


- Motor driver hose reels: A hose is reeled in and out by a motor which conveys power to a hose reel drum (through a gear or chain drive). Various types of drives are available - pneumatic, hydraulic and electric (12 V, 24 V, 110 V, 230 V, 400 V). The motor driven hose reels are recommended, when the hose is used very often or when the hose is particularly heavy and manual rewinding may not be possible.



## MACHINES AND ACCESSORIES - hose reels

### Hose reel construction - example



The main hose is connected to 90° swivel (1), led through a pass (2) and wound on a hose reel drum (3), mounted on an axle (4) fitted into a reel frame (5). The end of the main hose is led through a guiding arm (6) and secured with a bumper (7). A supply hose is connected to the inlet of a swivel (8). The base (9) allows wall-mounting. A spring mechanism is installed inside the drum, a ratchet mechanism that stops the hose at required length - on the axle of the hose reel.

### Hose reel selection

In order to match the hose reel model to the particular application properly, the following operation conditions and technical parameters must be considered:

a) Operation conditions:

- medium,
- working pressure,
- working and ambient temperature.

b) Technical parameters:

- internal and external diameter of the hose to be wound on the hose reel,
- type of the hose to be wound on the hose reel (due to their construction only some hoses are suitable for re-winding),
- hose bending radius (maximum a half of the hose reel drum diameter),
- length of the hose to be wound on the hose reel,
- drive of the hose reel,
- hose reel mounting position (wall, floor, ceiling, etc.).

### Note:

1. The maximum working pressure and temperature is always determined by the parameter of a smaller value in the hose reel - hose set.
2. The maximum hose length is limited by the drum capacity (diameter and width) for a hose of a particular external diameter, and, in the case of spring driven hose reels, maximum tension (number of revolutions) obtained by the spring.
3. A flexible hose assembly must be used to supply media to the inlet of a hose reel. Non-flexible connection may damage the hose reel.
4. When selecting a hose reel for chemically aggressive media, not only the hose must be resistant to them, but also the internal fluid path in the hose reel, the swivel connector and seal.

## MACHINES AND ACCESSORIES - hose reels

### REELCRAFT spring retractable reels



#### S series

**Material:** Polypropylene (black)  
**Working temp.:** Up to +65°C  
 (SHA3850 OLP version up to +85°C)

A general purpose hose reel, wall-mounted. Available with a hose and swivel mounting brackets as a standard. Widely used in car workshops, agriculture, gardening, industrial plants. A wire stand (RC-SG261398) to place the hose reel on the floor available on request.

Advantages: Light weight, corrosion resistant components.

code	usage	hose length [m]	hose I.D. [inch]	working pressure [bar]	weight [kg]	connection inlet / outlet [NPT fem. / NPT male]	
RC-SGA3665OLP	air / water	20	3/8	16	11.00	3/8"	3/8"
RC-SGA3850OLP	air / water	15	1/2	16	10.00	1/2"	1/2"
RC-SHA3850OLP	hot water	15	1/2	17	10.00	1/2"	1/2"



#### LC series

**Material:** Powder coated steel  
**Working temp.:** Up to +65°C

A hose reel intended for water and air; wall-mounted. A guide arm adjustable to five different positions allows to mount the reel in the most comfortable position. Widely used in car workshops, repair shops, petrol stations, gardening, paint shops, etc.

Advantages: easy installation, very long service life of a retraction spring.

code	usage	hose length [m]	hose I.D. [inch]	working pressure [bar]	weight [kg]	connection inlet / outlet [BSPT fem. / BSPT male]	
RC-LC650-OLP-70	with hose	15	3/8	21	17.00	1/4"	1/4"
RC-LC670-OLP-70	with hose	21	3/8	21	20.00	1/4"	1/4"
RC-LC850-OLP-70	with hose	15	1/2	21	19.00	1/2"	1/2"
RC-LC870-OLP-70	with hose	21	1/2	21	22.00	1/2"	1/2"
OLS version - stainless steel							
RC-LC607-OLS-70-S	without hose	21	3/8	21	16.00	1/4"	1/4"
RC-LC807-OLS-70-S	without hose	21	1/2	21	16.00	1/2"	1/2"

## MACHINES AND ACCESSORIES - hose reels

### REELCRAFT spring retractable reels



#### REELTEK

**Material:** Powder coated steel, drum made of composite materials with fibre glass reinforcement.

**Working temp.:** Up to +65°C

A hose reel designed for such industrial applications as air, water, oil and lubricant transfer. Supplied with or without a hose. A guide arm adjustable to seven different positions allows to mount the reel in the most comfortable position.

Advantages: Light weight, highly reliable.

code	option	hose length [m]	hose I.D. [inch]	working pressure [bar]	weight [kg]	connection inlet / outlet [NPT female / NPT male]	
low pressure hose reels							
RC-RT435OLP	with hose	11	1/4	21	11.00	3/8"	1/4"
RC-RT403OLP	without hose	11	1/4	21	9.00	3/8"	-
RC-RT450OLP	with hose	15	1/4	21	12.00	3/8"	1/4"
RC-RT405OLP	without hose	15	1/4	21	10.00	3/8"	-
RC-RT650OLP	with hose	15	3/8	21	14.00	3/8"	3/8"
RC-RT605OLP	without hose	15	3/8	21	11.00	3/8"	-
RC-RT835OLP	with hose	11	1/2	21	14.00	1/2"	1/2"
RC-RT803OLP	without hose	11	1/2	21	11.00	1/2"	-
medium pressure hose reels							
RC-RT635OMP	with hose	11	1/4	69	14.00	3/8"	3/8"
RC-RT603OMP	without hose	11	1/4	69	10.00	3/8"	-
RC-RT835OMP	with hose	11	3/8	69	16.00	1/2"	1/2"
RC-RT803OMP	without hose	11	3/8	69	11.00	1/2"	-
high pressure hose reels							
RC-RT435OHP	with hose	11	1/4	345	15.00	3/8"	1/4"
RC-RT403OHP	without hose	11	1/4	345	10.00	3/8"	-
RC-RT635OHP	with hose	11	3/8	276	16.00	1/2"	3/8"
RC-RT603OHP	without hose	11	3/8	276	11.00	1/2"	-



#### DP 7000

**Material:** Powder coated steel

**Working temp.:** Up to +100°C

A robust hose reel with a dual base of the drum to ensure stability and superior resistance to vibration. Complies to MIL-STD-810F standard (military truck-mounted equipment). A hose is not included, must be ordered separately.

Advantages: Suitable for heavy duty conditions.

code	option	hose length [m]	hose I.D. [inch]	working pressure [bar]	weight [kg]	connection inlet / outlet [NPT female / NPT male]	
low pressure hose reels							
RC-DP7600OLP	without hose	15	3/8	35	19.00	1/2"	1/4"
RC-DP7800OLP	without hose	15	1/2	35	20.00	1/2"	3/8"
medium pressure hose reels							
RC-DP7600OMP	without hose	15	3/8	207	21.00	1/2"	3/8"
RC-DP7800OMP	without hose	15	1/2	207	19.00	1/2"	1/2"

## MACHINES AND ACCESSORIES - hose reels

### REELCRAFT spring retractable reels



#### FUEL 7000 / 80000 series

**Material:** Powder coated steel

**Working temp.:** Up to +65°C

Due to Viton seals, the hose reels are especially suitable for fuels. The construction ensures superb strength to serve mobile and permanently mounted applications perfectly. As the hose reels are robust and corrosion resistant, they are ideal for petrochemical applications and other branches of industry. If a hose is ordered, it is assembled with 3/4" BSPT male thread. Advantages: Robust hose reel for fuels.

code	option	hose length [m]	hose I.D. [inch]	working pressure [bar]	weight [kg]	connection inlet / outlet [BSPT male]	
RC-F7925OLP	with hose	8	3/4	3.5	25	3/4"	3/4"
RC-F7900OLP	without hose	8	3/4	35	21	3/4"	3/4"
RC-F83050OLP	with hose	15	3/4	3.5	41	3/4"	3/4"
RC-F83000OLP	without hose	15	3/4	35	38	3/4"	3/4"
RC-FD83075OLP	with hose	22	3/4	3.5	59	3/4"	3/4"
RC-FD83000OLP	without hose	22	3/4	35	41	3/4"	3/4"
RC-FD84050OLP	with hose	15	1	3.5	55	1"	1"
RC-FD84000OLP	without hose	15	1	35	41	1"	1"



#### 9000 series

**Material:** Powder coated steel

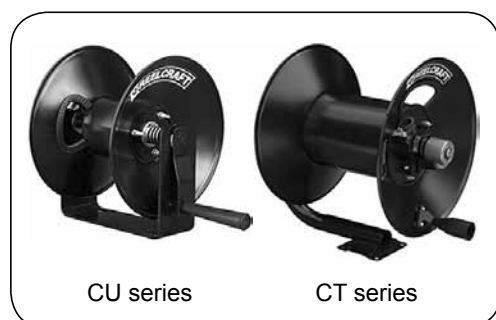
**Working temp.:** Up to +65°C

A hose reel intended for compressed air and water. Models designed for fuel and oil are also available. Ideal solution for service vans, permanent service units or plant work areas. Advantages: Robust construction and base for floor mounting, corrosion resistance.

code	option	hose length [m]	hose I.D. [inch]	working pressure [bar]	weight [kg]	connection inlet / outlet [female]	
RC-D9200OLP	without hose	30	1/2	35	53	1/2" NPT	1/2" NPT
RC-D9299OLP	with hose	30	1/2	21	61	1/2" NPT	1/2" NPT
RC-D9300OLP	without hose	23	3/4	35	53	3/4" BSP	3/4" BSP
RC-D9350OLP	with hose	15	3/4	17	59	3/4" BSP	3/4" BSP
RC-D9305OLP	without hose	30	3/4	35	59	3/4" BSP	3/4" BSP
RC-D9375OLP	with hose	23	3/4	17	69	3/4" BSP	3/4" BSP
RC-D9399OLP	with hose	30	3/4	17	79	3/4" BSP	3/4" BSP
RC-D9400OLP	without hose	15	1	35	53	1" BSP	1" BSP
RC-D9450OLP	with hose	15	1	17	63	1" BSP	1" BSP
RC-D9200OMP	without hose	23	1/2	207	54	1/2" NPT	1/2" NPT
RC-D9275OMP	with hose	23	1/2	137	60	1/2" NPT	1/2" NPT
RC-D9300OMP	without hose	15	3/4	207	54	3/4" BSP	3/4" BSP
RC-D9350OMP	with hose	15	3/4	86	65	3/4" BSP	3/4" BSP

## MACHINES AND ACCESSORIES - hose reels

### REELCRAFT hose reels



#### CU / CT series

**Material:** Powder coated steel

**Working temp.:** Up to +65°C

A hand crank hose reel designed for lighter-duty applications transferring air and water. Equipped with a brake to prevent hose unwinding when the reel is not used.

Advantages: Economical hose reel version for hose storing.

code	option	hose length [m]	hose I.D. [inch]	working pressure [bar]	weight [kg]	connection inlet / outlet [NPT female]	
low pressure hose reels							
RC-CU6050LN	without hose	15	3/8	21	5.00	3/8"	3/8"
RC-CU6100LN	without hose	30	3/8	21	7.00	3/8"	3/8"
RC-CU8050LN	without hose	15	1/2	21	6.00	1/2"	1/2"
RC-CU8100LN	without hose	30	1/2	21	9.00	1/2"	1/2"
high pressure hose reels							
RC-CT605OHN	without hose	15	3/8	345	6.00	1/2"	3/8"
RC-CT610OHN	without hose	30	3/8	345	7.50	1/2"	3/8"



#### 30000 series - hand crank

**Material:** Powder coated steel

**Working temp.:** From -30°C up to +130°C

A highly durable hose reel, resistant to vibration. All bolted construction, no welded elements. Perfect for long hoses. Hand-driven hose reels are intended for industrial as well as field application. Hoses for 30000 series reels must be ordered separately. BA version, with a bevel crank, is also available. 30000 series hose reels can also be assembled on carts and trailers.

Advantages: Intended for long hoses.

code	for hose length [m]	hose I.D. [inch]	working pressure [bar]	weight [kg]	connection inlet / outlet [BSP female]
RC-CA32106M118	30	1/2	207	18.00	1/2"
RC-CA32112M118	60	1/2	207	21.00	1/2"
RC-CA32118M118	100	1/2	207	25.00	1/2"
RC-CA32128M118	153	1/2	207	30.00	1/2"
RC-CA33112M118	30	3/4	207	21.00	3/4"
RC-CA33118M118	54	3/4	207	25.00	3/4"
RC-CA33128M118	84	3/4	207	30.00	3/4"
RC-CA37118L118	30	1	21	26.00	1"
RC-CA37122L118	38	1	21	28.00	1"
RC-CA37128L118	47	1	21	30.00	1"
RC-CH37112 M118	17	1	207	22.00	1"
RC-CH37122 M118	30	1	207	28.00	1"
RC-CH37128 M118	38	1	207	30.00	1"

## MACHINES AND ACCESSORIES - hose reels

### REELCRAFT hose reels



### 30000 series - motor driven

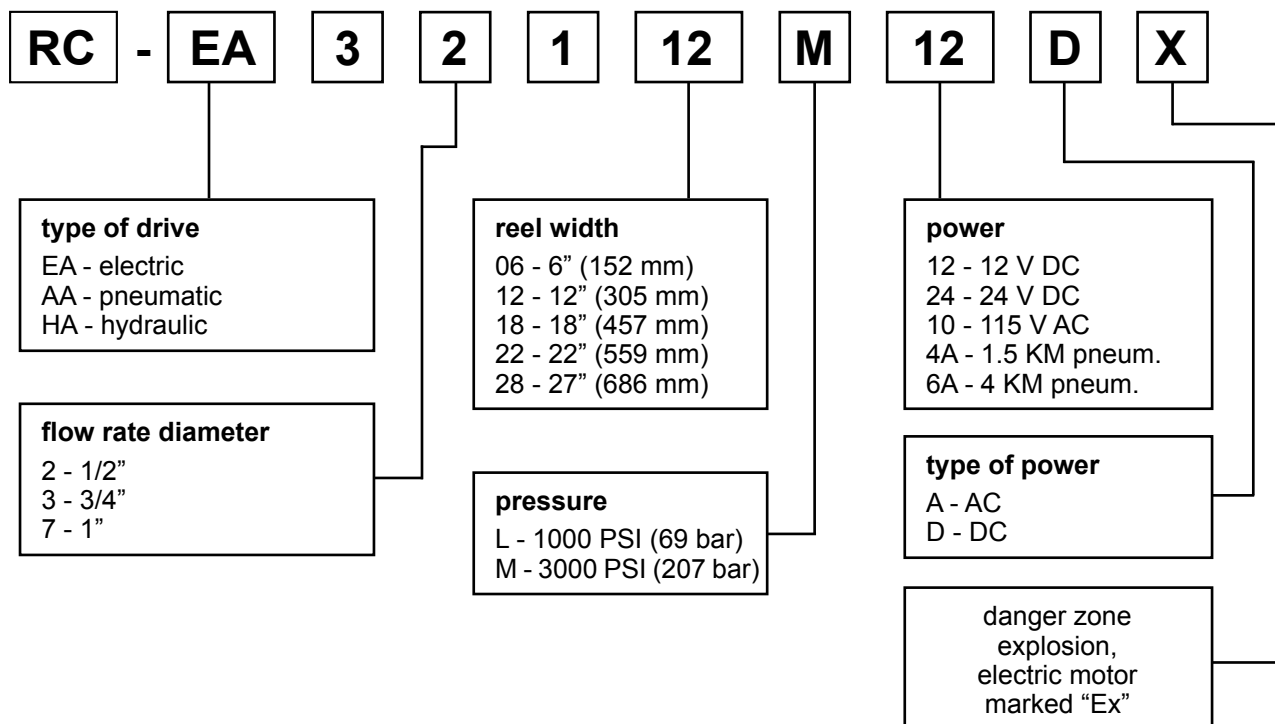
**Material:** Powder coated steel  
**Working temp.:** From -30°C up to +120°C

30000 series hose reel of a highly durable construction, resistant to vibration. All bolted construction (no welded elements), a large frame and robust drum ensure long service life. Available as a hand crank, pneumatic, hydraulic or electric drive version. Hoses for 30000 series reels must be ordered separately. Advantages: Intended for long hoses.

code	hose length [m]	hose I.D. [inch]	working pressure [bar]	connection inlet / outlet [NPT female]
RC-...32106M...	30	1/2	207	1/2"
RC-...32112M...	60	1/2	207	1/2"
RC-...32118M...	100	1/2	207	1/2"
RC-...32122M...	122	1/2	207	1/2"
RC-...32128M...	153	1/2	207	1/2"
RC-...33106M...	16	3/4	207	3/4"
RC-...33112M...	30	3/4	207	3/4"
RC-...33118M...	54	3/4	207	3/4"
RC-...33122M...	69	3/4	207	3/4"
RC-...33128M...	84	3/4	207	3/4"
RC-...37118L...	30	1	21	1"

NOTE: According to the requirements of the Machinery Directive, power driven hose reels must be equipped with a chain cover - to be ordered separately, code RC-600518 (see: REELCRAFT hose reel accessories).

#### Construction of the code 30000 series





# MACHINES AND ACCESSORIES - hose reels

## REELCRAFT hose reels



### NORDIC™ series

**Material:** Carbon steel, aluminium, stainless steel

**Working temp.:** From -20°C up to +80°C

Large frame hose reels for hoses with internal diameter up to 4" (100 mm). A wide range of drive options, connections, working pressure and fluid paths. Widely used in petrochemical, ship-building, offshore, construction and mining industry.

Advantages: Robust construction, large hose diameters.

drive		series	spool diameter	spool length	thread size		connection type		thread type	
E	12 V DC	1200	19"	6" ÷ 36" (incr. 2")	50	1/2"	F	female out	NP	NPT
NJ	24 V DC	2400	21"		75	3/4"	FF	female in/out	BP	BSP
EP	12 V DC Ex*	3900	23"		10	1"	M	male out	BT	BSPT
EA	115 V AC Ex*	3700	25"		12	1.1/4"	MM	male in/out		
EJ	24 V DC Ex*	5900	28"		15	1.1/2"	V	groove coupling		
HD	hydraulic		31"		20	2"				
AF	pneumatic 1.5 KM		36"		25	2.1/2"				
AR	pneumatic 4 KM		39"		30	3"				
BC	bevel crank		46"		40	4"				
HC	hand crank									

material**		max. working press. [bar]		inlet style		fluid path location/hose direction		colour	
A	aluminium	LP	41	1	straight	1	left hand / top wind	R	red
D	ductile cast iron	1K	69	2	90°	2	left hand / bottom wind	B	black
S	stainless steel	3K	207	5	1" LPG	3	right hand / top wind	W	white
B	bronze	5K	345	6	1.1/2" LPG	4	right hand / bottom wind	G	grey
		6K	414	7	2" LPG			S	silver
		10K	690						

\* - electric explosion proof motor (for use in potentially explosives zones)

\*\* - fluid path material

### Construction of the code NORDIC™ series

## RC- EP3900-23-28-15FFNPALP21-R00

**EP** - 12 V DC electric engine - explosion proof motor version (for use in potentially explosives zones)

**3900** - 3900 series

**23** - 23" drum diameter

**28** - 28" drum length

**15** - 1.1/2" thread size

**FF** - female outlet/female inlet

**NP** - NPT thread

**A** - fluid path material: aluminium

**LP** - working pressure to 41 bar

**2** - 90° inlet style

**1** - fluid path location: left hand; hose direction: top wind

**R** - red

**00** - additional accessories

## MACHINES AND ACCESSORIES - hose reels

### Special purpose REELCRAFT hose reels



#### G series

**Material:** Powder coated steel

**Working temp.:** Up to +65°C

A hose reel intended to secure equipment such as tank trucks or other vehicles transferring flammable materials and operating in hazardous conditions, against electrostatic discharge. When properly grounded, it prevents electrostatic charges build-up thus reduces the risk of sparking and potential explosion. ATEX version available.

Advantages: Small, compact construction

code	length [mm]	width [mm]	height [mm]	cable length [m]	weight [kg]	notes
RC-G3050N	219	85	224	15	5.5	Nylon covered electrical cable.
RC-G3100N	235	110	248	30	10	Nylon covered electrical cable.

### ATEX certified REELCRAFT hose reels



A potentially explosive atmosphere consists of a mixture of air, gases, vapour, mists or dust, which can ignite under particular operation conditions. Potentially explosive atmospheres may occur on oil rigs, in petrochemical plants, mines, flour mills and other areas prone to explosive atmosphere buildup.

Directive 94/9/EC (ATEX) defines the technical requirements and adequate assessment procedures intended to verify the conformity of the equipment and protection systems used in the potentially explosive atmospheres.











Reelcraft hose reels, ATEX version (spring driven, hand crank and pneumatic) meet ATEX requirements for electrical equipment:

- spring driven: II 2G c IIC T5 Gb/ II 2D c IIIC T100°C Db,
- hand crank: II 2G c IIC T5 Gb/ II 2D c IIIC T100°C Db,
- pneumatic: II 2G c IIC T4 Gb/ II 2D c IIIC T135°C Db.

Conductive hoses ( $R < 10^6 \Omega/m$ ) must be used with these hose reels.

## MACHINES AND ACCESSORIES - hose reels

### REELCRAFT hose reel accessories

picture	code	description
5000. 7000 series		
	RC-600626	180° swivel bracket, wall-mounted.
	RC-600608	340° swivel bracket, wall or floor-mounted.
80000. D80000100 series		
	RC-600980	180° swivel bracket, wall-mounted.
30000 series		
  pic. 1      pic. 2	RC-602328 (pic. 1)	hose reel cart (only for models with a code ending with X106).
	RC-600741-2 (pic. 2)	hose reel cart (only for models with a code ending with X112).
	RC-600885-2 (pic. 2)	hose reel cart (only for models with a code ending with X118).
	RC-600518	chain cover (required for electric, hydraulic and pneumatic drive hose reels).
40 series		
	RC-600952-10	roller guide (only for models with a code 4X2101XX1LC70).
	RC-600952-19	roller guide (only for models with a code 4X2191XX1LC70).
	RC-600953-10	roller guide (only for models with a code 4X2101XX1LC70).
	RC-600953-19	roller guide (only for models with a code 4X2191XX1LC70).
	RC-261746	chain cover (required for electric, hydraulic and pneumatic drive hose reels).
rubber hose bumpers		
	RC-1-HR1004-A	hose external diameter 11.2 x 15.9 mm.
	RC-1-HR1004	hose external diameter 15.9 x 19 mm.
	RC-2-HR1005	hose external diameter 19.2 x 26.7 mm.
	RC-3-HR1005	hose external diameter 26.9 x 35 mm.
	RC-4-HR1005	hose external diameter 35.3 x 39.4 mm.

## MACHINES AND ACCESSORIES - hose reels

### SAURO ROSSI spring retractable reels



Spring driven reels for transfer of cold and hot water, oil, lubricant and other substances. Widely used in food, chemical industry, production plants, service workshops, dairies, slaughterhouses, farms, petrol stations, sewage treatment plant applications. Reels have a spring driven mechanism that allows a complete retraction each time it is slightly pulled out. A MINI series hose reel is available with a PVC hose designed for air and water in the temperature range from -10°C up to +60°C. Other models are supplied without hose. Swing bracket available as a separate item.

code	working pressure [bar]	thread inlet [inch]	thread outlet [inch]	hose I.D. [inch]	for hose length [m]	material*
SR-500015-A	250	1/2 male	1/2 female	1/2	15	galvanized steel
SR-500015-X	250	1/2 male	1/2 female	1/2	15	AISI 304
SR-500020-A	250	1/2 male	1/2 female	1/2	25	galvanized steel
SR-500020-X	250	1/2 male	1/2 female	1/2	25	AISI 304
SR-510008-A	200	1 male	1 female	1	10	galvanized steel
SR-510008-X	200	1 male	1 female	1	10	AISI 304
SR-510020-A	200	1 male	1 female	1	20	galvanized steel
SR-510020-X	200	1 male	1 female	1	20	AISI 304
SR-550660-A	250	1/2 male	3/8 female	3/8	70	galvanized steel
SR-550660-X	250	1/2 female	3/8 female	3/8	70	AISI 304
SR-MINI	30	1/4 female	1/4 male	8x12 mm	15	PVC
SR-968002-F	swing bracket for SR-550660-A					
SR-968002-X	swing bracket for SR-550660-X					
SR-968003-F	swing bracket for SR-500015-A, SR-500020-A, SR-510008-A					
SR-968003-X	swing bracket for SR-500015-X, SR-500020-X, SR-510008-X					
SR-968004-F	swing bracket for SR-510020-A					
SR-968004-X	swing bracket for SR-510020-X					

\* - reels made of powder coated galvanized steel are available in red colour

## MACHINES AND ACCESSORIES - hose reels

### ECODORA spring retractable reels



#### 430 / 530 / 540 / 560 series

**Material:** Powder coated steel

**Seal:** Viton

**Working temp.:** Up to +130°C

Spring driven hose reels designed to transfer cold and hot water, oil, lubricants and other media. Equipped with a spring tested to 25000 cycles (reel in/reel out). Complies to ATEX Directive 94/9 IIB 2GD c T4 T135C X. A hose is not included, must be ordered separately. A swing bracket is available as a separate item. Advantages: AISI 304 steel swivel coupling, Viton seal.

code	hose length [m]	hose I.D. [inch]	working pressure [bar]	efficiency [l/min]	connection inlet / outlet [BSP female]	
ED-430-20	15	1/2	150	75	1/2"	1/2"
ED-530-20	25	1/2	150	75	1/2"	1/2"
ED-540-25	30	1/2	150	75	1/2"	1/2"
ED-540-20	20	3/4	150	150	1"	1"
ED-560-20	30	1	150	150	1"	1"
ED-430-30	18	3/8	200	30	3/8"	1/2"
ED-540-30	30	3/8	200	30	3/8"	1/2"
ED-430-05	swing bracket for 430 series					
ED-530-05	swing bracket for 530 series					
ED-540-05	swing bracket for 540 series					

Basic dimensions of different series:

	series	A	B	C	D	E	F	G	H
	430	186	140	196	226	115	450	420	460
	530	203	153	220	258	115	550	510	560
	540	300	218	228	268	190	550	510	573
	560	488	399	238	272	368	522	510	578

## MACHINES AND ACCESSORIES - hose reels

### ECODORA spring retractable reels



#### 304 / 354 / 434 / 534 / 544 / 564 series

**Material:** AISI 304 stainless steel

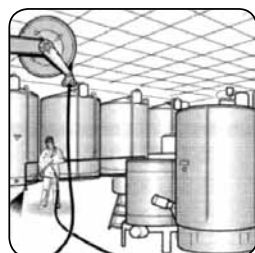
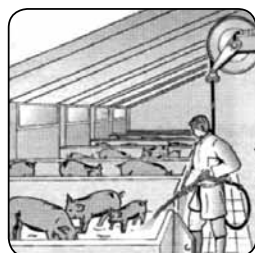
**Working temp.:** Up to +130°C

Hose reels designed for food, chemical industry as well as applications where corrosion may affect metal parts. Equipped with a spring tested to 25000 cycles (reel in/reel out). Complies to ATEX Directive 94/9 IIB 2GD c T4 T135C X. A hose is not included, must be ordered separately. A swing bracket is available as a separate item. Available as a stainless steel version (all parts made of AISI 316) or with a stainless steel fluid path. Advantages: Durability, operation safety, user-friendly.

code	hose length [m]	hose I.D. [inch]	working pressure [bar]	efficiency [l/min]	sealing	connection inlet / outlet [BSP female]	
ED-304-40	8	1/2	150	60	Viton	1/2"	1/2"
ED-354-40	17	3/8	150	60	Viton	1/2"	1/2"
ED-434-20	15	1/2	150	75	Viton	1/2"	1/2"
ED-534-20	25	1/2	150	75	Viton	1/2"	1/2"
ED-544-25	30	1/2	150	75	Viton	1/2"	1/2"
ED-544-20	20	3/4	150	150	Viton	1"	1"
ED-564-20	30	1	150	150	Viton	1"	1"
ED-434-30	18	3/8	200	30	Viton	3/8"	1/2"
ED-544-30	30	3/8	200	30	Viton	3/8"	1/2"
ED-534-35	25	3/8	400	40	PTFE	3/8"	1/2"
ED-564-35	50	3/8	400	40	PTFE	3/8"	1/2"
ED-430-06	swing bracket for 434 series						
ED-540-06	swing bracket for 544 series						
ED-530-06	swing bracket for 534 series						

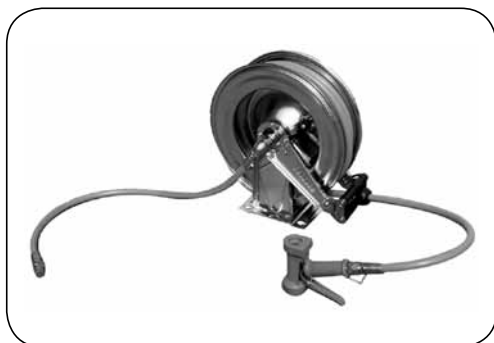
#### Basic dimensions of different series:

	series	A	B	C	D	E	F	G	H
	304	186	140	196	226	110	355	350	365
	354	186	140	196	226	110	400	390	410
	434	186	140	196	226	115	450	420	460
	534	203	153	220	258	115	550	510	560
	544	300	218	228	268	190	550	510	573
	564	488	399	238	272	368	522	510	578



## MACHINES AND ACCESSORIES - hose reels

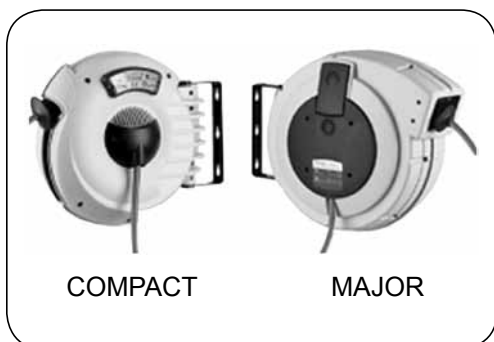
### ECODORA spring retractable reels



#### ECODORA 434 set

ECODORA 434 series hose reel complete with THERMO-CLEAN AL 1/2" hose, 15 m in length and HEAVY DUTY water spray gun. AK-SWR swivel fitting connects the hose with the gun. This set is additionally equipped with a supply hose assembly, 1 m in length, with 1/2" BSP female thread fitting. Fittings, ferrules and adapters used to mount the hose to the reel are all made of AISI 316 stainless steel.

### ML spring retractable reels



#### Compact / Major series

**Material:** Plastic

**Working temp.:** Up to +50°C

Hose reels suitable for applications with a limited space requirement such as service cars, assembly lines, workbenches etc. Polyurethane hose equipped with a strain relief spring to protect against excessive bending and a swivel bracket come as a standard.

code	version	hose length [m]	hose I.D. [inch]	working pressure [bar]	weight [kg]	connection inlet / outlet [BSP fem. / BSP male]	
ML-808075	COMPACT	12	5/16	15	4.10	1/4	1/4
ML-821100	MAJOR	15	5/16	15	5.10	1/4	1/4
ML-821300	MAJOR	15	3/8	15	5.50	3/8	3/8

## MACHINES AND ACCESSORIES - hose reels

### EZ-COIL spring retractable reels



P series



SH series



T series



S series

Powder coated (blue colour) carbon steel hose reels designed for food, chemical industry as well as production plants, service stations, etc. Equipped with a patented controlled retraction system - EZ-Coil® that retracts up to 80% slower than conventional spring driven reels. The EZ-Coil® was specifically designed and introduced to reduce workplace accidents, increase operator safety, extend hose, swivel and hose reel service life. A hose is connected directly to a swivel that facilitates assembly. The hose is not included, must be ordered separately.

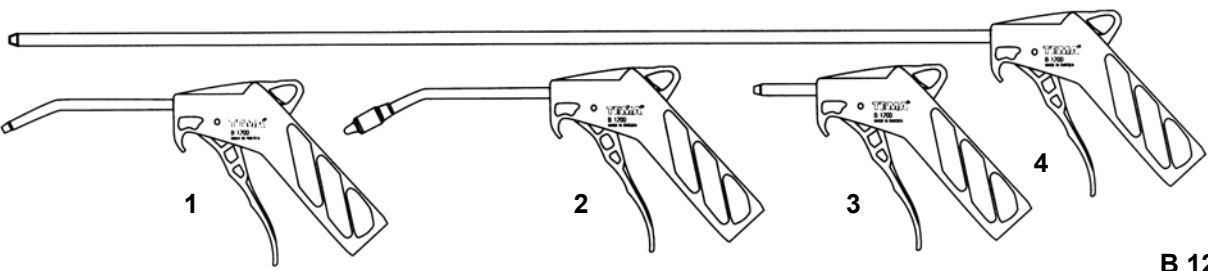
Advantages: Increased operation and work safety compared to standard spring driven hose reels.

series	code	hose length [m]	hose I.D. [inch]	working pressure [bar]	connection inlet / outlet [BSP]	weight without hose [kg]
P	CR-EZ-P-LPL-350-BGX	15	3/8"	21	3/8"	16.00
	CR-EZ-P-LPL-450-BGX	15	1/2"	21	1/2"	22.00
	CR-EZ-P-HPL-125-BGX	9	1/4"	350	1/4"	20.00
SH	CR-EZ-SHL-4100-BGX	31	1/2"	21	1/2"	30.00
	CR-EZ-SHL-550-BGX	15	3/4"	21	3/4"	25.00
	CR-EZ-MPL-350-BGX	15	3/8"	210	3/8"	24.00
T	CR-EZ-TSHL-4100-BGX	30	1/2"	21	1/2"	36.00
	CR-EZ-TMPL-550-BGX	15	3/4"	105	3/4"	34.00
	CR-EZ-THPL-350-BGX	15	3/8"	280	3/8"	30.00
S-left	CR-EZ-SL15L-L325-BGX	8	3/8"	21	3/8"	8.00
	CR-EZ-SL19L-L450-BGX	15	1/2"	21	1/2"	13.00




## MACHINES AND ACCESSORIES - pneumatic accessories

### TEMA air blow guns

					
<b>B 1200</b>					
pic.	code	nozzle length [mm]	connection	version	description
1	TA-G-B1200	110	1/4" BSP female	standard	
2	TA-G-B1200A	120		low-noise level	
3	TA-G-B1200B	30		short	
4	TA-G-B1200C	500		long	
-	TA-G-B1211	-	-	safety shield	

General purpose compressed air blow gun equipped with a highly durable shut-off valve. Very lightweight, fully ergonomic design offers simple and comfortable operation and grip. Exceptional durability - the body is made of impact resistant plastic material. The nozzle is corrosion resistant.  
Bursting, press.: 80 bar.  
Working temp.: from -30°C up to +80°C.


### JWL air blow guns

					
<b>AIR BOY</b>					
pic.	code	connection	version	description	
1	JW-140100-100	1/4" BSP female	with 100 mm straight nozzle	General purpose blow gun for air. Very lightweight, fully ergonomic design offers simple and comfortable operation and grip. The lever mechanism of a handle is designed for precise control of medium flow. Compliant with OSHA standard and Directive 2003/10-CE. Body material: acetal. Nozzle material: galvanized steel. Seal: NBR. Working press.: up to 16 bar. Working temp.: from -10°C to +80°C. Flow rate: 380 l/min (at 8 bar pressure). Noise level: 85 dB (at 8 bar pressure). Blowing force: 3.92 N.	
2	JW-140101-000		with 100 mm bent nozzle		
3	JW-140103-000		with 100 mm bent nozzle, flow adjustment		
1	JW-140112-000		with 300 mm straight long nozzle		
	JW-140113-000		with 500 mm straight long nozzle		
	JW-140114-000		with 1500 mm bent nozzle		
2	JW-140120-000*		with 100 mm straight nozzle		

\* - AISI 316L stainless steel nozzle.

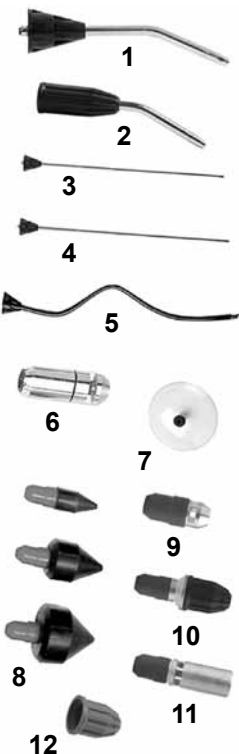
# MACHINES AND ACCESSORIES - pneumatic accessories

## CEJN 208 air blow guns

						
pic.	code	connection	noise level [dB]	flow rate [l/min]	version	description  General purpose blow guns for air, water and non-explosive fluids. Several gun versions are available, also with removable nozzles. Very lightweight, fully ergonomic design offers simple and comfortable operation and grip. A wide range of accessories helps to adjust the blow guns to suit different application requirements. Body material: POM. Valve material: brass. Seal: NBR. Working press.: up to 16 bar (8 bar version with flow adjustment). Bursting press.: 64 bar. Working temp.: from -20°C to +60°C.
1	CJ-112080000 <sup>2)</sup>	1/4" BSP fem.	-	-	without nozzle	
	CJ-112080050 <sup>2)</sup>	1/4" NPT fem.				
2	CJ-112080100	1/4" BSP fem.	96	500	with 90 mm bent nozzle	
	CJ-112080150	1/4" NPT fem.				
	CJ-112080200	1/4" BSP fem.	94	500	with 90 mm bent nozzle, removable	
	CJ-112080250	1/4" NPT fem.				
3	CJ-112080300 <sup>2)</sup>	1/4" BSP fem.	93	250	with removable nozzle, flow adjustment	
	CJ-112080350 <sup>2)</sup>	1/4" NPT fem.				
4	CJ-112083100 <sup>1,2)</sup>	1/4" BSP fem.	79	190	with 90 mm bent nozzle, Star-Tip	
	CJ-112083200 <sup>1,2)</sup>	1/4" BSP fem.				
	CJ-112083250 <sup>1,2)</sup>	1/4" NPT fem.			with 90 mm bent nozzle, Star-Tip, removable	


1) noise level below 85 dB, compliant with EU Machinery Directive art. 1.5.8.

2) compliant with OSHA 1-13.1 standard (Occupational Health and Safety Administration).

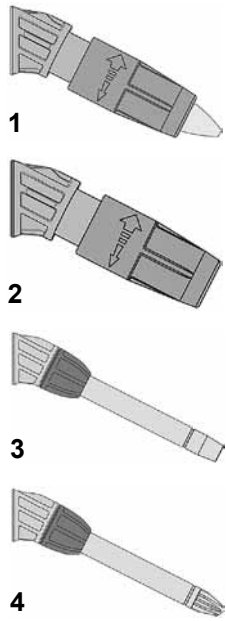
	code	description	pic.
	CJ-112080215	90 mm bent nozzle (500 l/min.).	1
	CJ-112080216 <sup>2)</sup>	90 mm bent nozzle, with flow regulator.	2
	CJ-112083215 <sup>1,2)</sup>	90 mm bent nozzle, Star Tip (190 l/min.).	
	CJ-112080219	300 mm straight extension nozzle (380 l/min.).	3
	CJ-112080220	500 mm straight extension nozzle (380 l/min.).	
	CJ-112080222 <sup>1)</sup>	400 mm bendable nozzle (120 l/min.).	5
	CJ-112083219 <sup>1,2)</sup>	300 mm straight extension nozzle, Star Tip (180 l/min.).	4
	CJ-112083220 <sup>1,2)</sup>	500 mm straight extension nozzle, Star Tip (180 l/min.).	
	CJ-112089954 <sup>2)</sup>	Nozzle with air shield.	6
	CJ-112089955	100 mm safety shield.	7
	CJ-112089956	Rubber-tip nozzle, Ø 14 mm.	8
	CJ-112089957	Rubber-tip nozzle, Ø 25 mm.	
	CJ-112089958	Rubber-tip nozzle, Ø 34 mm.	
	CJ-112089960	Rubber-tip nozzle set, Ø 14, Ø 25, Ø 34 mm.	
	CJ-112089961 <sup>2)</sup>	Nozzle with reducer of pressure below 2 bar.	9
	CJ-112089962 <sup>1,2)</sup>	Nozzle with silencer, noise below 85 dB (fits onto tube).	10
	CJ-112089963 <sup>2)</sup>	Venturi nozzle (flow is doubled).	11
	CJ-112089965 <sup>1,2)</sup>	Nozzle with silencer (fits threads of blow gun).	12

## MACHINES AND ACCESSORIES - pneumatic accessories

### CEJN Multiflow 210 air blow guns

						
pic.	code	connection	air flow rate [l/min]	water flow rate [l/min]	version	description
1	CJ-112100400 <sup>1)</sup>	CEJN 320 plug	200 ÷ 1200	5 ÷ 25	with adjustable flow nozzle	<p>General purpose, premium blow gun for air, water and non-explosive fluids. Very lightweight, fully ergonomic design offers simple and comfortable operation and grip. The jet of a medium can be easily modified with an adjustable nozzle and adjustable flow control to suit particular application precisely. Material: POM, TPE, aluminium. Seal: NBR. Working press.: up to 16 bar. Working temp.: from -20°C up to +60°C. Noise level: 79 ÷ 103 dB.</p>
	CJ-112100450 <sup>1)</sup>	1/4" BSP fem.	200 ÷ 1200	5 ÷ 25	with adjustable flow nozzle	
2	CJ-112100100	CEJN 320 plug	150 ÷ 1100	-	with 90 mm straight nozzle	
3	CJ-112103100 <sup>1)</sup>	CEJN 320 plug	100 ÷ 700	-	with 90 mm straight nozzle, Star-Tip	
4	CJ-112100340	CEJN 417 plug	-	3.5 ÷ 15	with adjustable fluid nozzle	

1) compliant with OSHA 1-13.1 standard (European Occupational Health and Safety Administration).

		code	description	pic.
	1	CJ-112100200	Adjustable flow nozzle intended for CEJN 210 blow gun; the jet of a medium can be easily set to suit any possible application.	1
	2	CJ-112100210	Adjustable fluid nozzle for CEJN 210 blow gun; the jet of fluid can be easily set to suit any possible application.	2
	3	CJ-112100220	90 mm straight nozzle for CEJN 210 blow gun.	3
	4	CJ-112100230	90 mm straight nozzle, Star-Tip for CEJN 210 blow gun; noise level reduction.	4

## MACHINES AND ACCESSORIES - pneumatic accessories

### EWO air blow guns



1



2



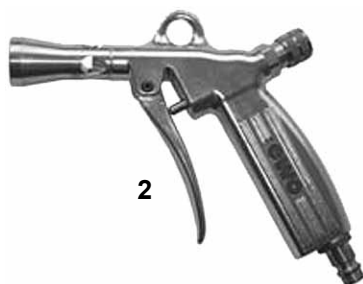
3

**STANDARD**

pic.	code	connection	description
1	EW-26941 <sup>3)</sup>	DN 7.2 quick release coupling plug	General purpose blow gun designed for the removal of all kinds of dirt: fluid, chips, shavings, etc., from any surface. The flow is adjusted with a lever. The blow gun is equipped with STANDARD nozzle. Other nozzles can be also used - see „EWO blow gun accessories”. Material: anodised forged aluminium. Nozzle diameter: 1.5 mm. Nozzle connection: M12x1.25 male thread. Working press.: from 2 bar up to 8 bar. Max. working press.: 10 bar. Working temp.: from -10°C up to +50°C. 1) - cast aluminium. 2) - with a valve for maximum flow control. 3) - suitable for water.
2	EW-26941E <sup>2), 3)</sup>		
3	EW-26941L <sup>1)</sup>		
1	EW-26911 <sup>3)</sup>	6 mm hose tail	
2	EW-26911E <sup>2), 3)</sup>		
3	EW-26911L <sup>1)</sup>		
1	EW-26917 <sup>3)</sup>	10 mm hose tail	
2	EW-26917E <sup>2), 3)</sup>		
3	EW-26917L <sup>1)</sup>		
1	EW-26918 <sup>3)</sup>	13 mm hose tail	
2	EW-26918E <sup>2), 3)</sup>		
3	EW-26918L <sup>1)</sup>		



1



2




3

**FULL-JET**

pic.	code	connection	description
1	EW-269374	DN 7.2 quick release coupling plug	General purpose blow gun designed for the removal of all kinds of dirt: fluid, chips, shavings, etc., from any surface. The flow is adjusted with a lever. The blow gun is equipped with FULL-JET nozzle to provide the jet of air which is much wider in comparison to STAND-ARD nozzle. Other nozzles can be also used - see „EWO blow gun accessories”. Material: anodised forged aluminium. Nozzle diameter: 2.5 mm. Nozzle connection: M12x1.25 male thread. Working press.: from 2 bar up to 8 bar. Max. working press.: 10 bar. Working temp.: from -10°C up to +50°C. 1) - cast aluminium. 2) - with a valve for maximum flow control.
2	EW-269374E <sup>2)</sup>		
3	EW-269374L <sup>1)</sup>		
1	EW-269324	6 mm hose tail	
2	EW-269324E <sup>2)</sup>		
3	EW-269324L <sup>1)</sup>		
1	EW-269344	10 mm hose tail	
2	EW-269344E <sup>2)</sup>		
3	EW-269344L <sup>1)</sup>		
1	EW-269354	13 mm hose tail	
2	EW-269354E <sup>2)</sup>		
3	EW-269354L <sup>1)</sup>		

## MACHINES AND ACCESSORIES - pneumatic accessories

### EWO air blow guns



**BLOWSTAR**


pic.	code	connection	description
1	EW-269530	DN 7.2 quick release coupling plug	<p>General purpose blow gun designed for the removal of all kinds of dirt: fluid, chips, shavings, etc., from any surface. The flow is adjusted with a lever. The blow gun is equipped with BLOWSTAR nozzle that reduces the noise level down to 74 dB at 6 bar pressure but blowing force remains unaltered. Maximum blowing force is 2.5 times higher than the force of STANDARD nozzle. Other nozzles can be also used - see „EWO blow gun accessories“.</p> <p>Material: anodised forged aluminium.  Nozzle connection: M12x1.25 male thread.  Working press.: from 2 bar up to 8 bar.  Max. working press.: 10 bar.  Working temp.: from -10°C up to +50°C.  1) - cast aluminium.  2) - with a valve for maximum flow control.</p>
2	EW-269530E <sup>2)</sup>		
3	EW-269530L <sup>1)</sup>		
1	EW-269531	6 mm hose tail	
2	EW-269531E <sup>2)</sup>		
3	EW-269531L <sup>1)</sup>		
1	EW-269532	10 mm hose tail	
2	EW-269532E <sup>2)</sup>		
3	EW-269532L <sup>1)</sup>		
1	EW-269533	13 mm hose tail	
2	EW-269533E <sup>2)</sup>		
3	EW-269533L <sup>1)</sup>		
1	EW-269430	1/4" female thread	
2	EW-269430E		
3	EW-269430L <sup>1)</sup>		

**SAFETYSTAR**

pic.	code	connection	description
1	EW-269220	DN 7.2 quick release coupling plug	<p>General purpose blow gun designed for the removal of all kinds of dirt: fluid, chips, shavings, etc., from hard-to-reach areas. The flow is adjusted with a lever. The blow gun is equipped with a bent SAFETYSTAR nozzle, 110 mm long, made of nickel-plated steel. The noise level of the gun is reduced down to 80 dB. Other nozzles can be also used - see „EWO blow gun accessories“.</p> <p>Material: anodised forged aluminium.            Nozzle connection: M12x1.25 male thread.            Working press.: from 2 bar up to 8 bar.            Max. working press.: 10 bar.            Working temp.: from -10°C up to +50°C.            1) - cast aluminium.            2) - with a valve for maximum flow control.</p>
2	EW-269220E <sup>2)</sup>		
3	EW-269220L <sup>1)</sup>		
1	EW-269221	6 mm hose tail	
2	EW-269221E <sup>2)</sup>		
3	EW-269221L <sup>1)</sup>		
1	EW-269222	10 mm hose tail	
2	EW-269222E <sup>2)</sup>		
3	EW-269222L <sup>1)</sup>		
1	EW-269223	13 mm hose tail	
2	EW-269223E <sup>2)</sup>		
3	EW-269223L <sup>1)</sup>		
1	EW-269224	1/4" female thread	
2	EW-269224E		
3	EW-269224L <sup>1)</sup>		




## MACHINES AND ACCESSORIES - pneumatic accessories

### EWO air blow guns



EWO 470

pic.	code	connection	version	description
1	EW-47041	DN 7.2 plug	with STANDARD nozzle ø 1.5 mm	<p>General purpose blow gun designed for the removal of all kinds of dirt: fluid, chips, shavings, etc., from any surface. The flow is adjusted with a lever. Due to the very low weight, the gun is particularly recommended for automotive, textile, electronic industry, etc. Other nozzles can be also used - see „EWO blow gun accessories“. Material: blue PA6 polyamide reinforced with fibre glass. Seal: NBR, PU. Nozzle connection: M12x1.25 male thread. Working press.: from 2 bar do 6 bar. Max. working press.: 10 bar. Working temp.: from -10°C up to +50°C.</p>
	EW-47011	6 mm hose tail		
	EW-47017	9 mm hose tail		
	EW-47018	13 mm hose tail		
	EW-47040	1/4" female thread		
2	EW-470141	DN 7.2 plug	with 110 mm bent extension nozzle, ø 2.3 mm	
	EW-470111	6 mm hose tail		
	EW-470117	9 mm hose tail		
	EW-470118	13 mm hose tail		
	EW-470140	1/4" female thread		
3	EW-47053	DN 7.2 plug	with BLOWSTAR nozzle noise reduction down to 74 dB	
	EW-47055	6 mm hose tail		
	EW-47056	9 mm hose tail		
	EW-47057	13 mm hose tail		
	EW-47043	1/4" female thread		
4	EW-470145	DN 7.2 plug	with 110 mm SAFETYSTAR bent extension nozzle, noise reduction down to 80 dB	
	EW-470148	6 mm hose tail		
	EW-470151	9 mm hose tail		
	EW-470153	13 mm hose tail		
	EW-470146	1/4" female thread		

picture	code	connection	description
	EW-27011	6 mm hose tail	<p>Compressed air nozzle with a valve. Material: aluminium. Nozzle diameter: 2 mm. Working press.: 1 ÷ 6 bar. Max. working press.: 8 bar. Work. temp.: from -10°C to +50°C.</p>
	EW-27017	9 mm hose tail	
	EW-27041	DN 7.2 plug	
	EW-31911	6 mm hose tail	<p>Flexible, rubber nozzle for compressed air. Flow is easily adjusted by bending the nozzle. Nozzle diameter: 2 mm. Working press.: 1 ÷ 6 bar. Max. working press.: 10 bar. Work. temp.: from -10°C to +50°C.</p>
	EW-31917	9 mm hose tail	
	EW-31941	DN 7.2 plug	
	EW-27141	DN 7.2 plug	<p>Compressed air blow pen with one-hand, comfortable flow adjustment. Material: aluminium. Nozzle diameter: 0 ÷ 3 mm. Working press.: 1 ÷ 6 bar. Max. working press.: 12 bar. Work. temp.: from -10°C to +60°C.</p>

# MACHINES AND ACCESSORIES - pneumatic accessories


## EWO air blow guns - accessories


The accessories below are intended for the following blow guns :  
STANDARD, FULL-JET, BLOWSTAR, SAFETYSTAR, EWO 470.

pic.	code	description
1	EW-470K61	6 hole, flat nozzle with M12x1.25 male thread, material: blue polyamide; max. press.: 6 bar; working temp.: from -10°C up to +50°C.
2	EW-470K60	16 hole, flat nozzle with M12x1.25 male thread, material: blue polyamide; max. press.: 6 bar; working temp.: from -10°C up to +50°C.
3	EW-105K6	Standard nozzle, 1.5 mm diameter, with centered hole and high blowing power; noise level 85 dB at pressure above 4 bar.
	EW-105K7	Standard nozzle, 2 mm diameter, with centered hole and high blowing power; noise level 90 dB at pressure above 4 bar.
4	EW-269K33	Nozzle with built-in silencer, with wide air jet and low noise level - below 70 dB.
5	EW-269K45	FULL-JET injector nozzle, 2 mm diameter, made of polyamide, with wide air jet and low noise level - below 90 dB.
6	EW-269K59	FULL-JET injector nozzle, 2.5 mm diameter, made of aluminium, with wide air jet and low noise level - below 90 dB.
7	EW-105K45	Bicycle nozzle.
8	EW-269K27	Nozzle with air shield protects operator against small particles of dirt during cleaning operations and dampens noise.
9	EW-470K37	BLOWSTAR nozzle (without double nipple) features very low noise level, down to hardly 74 dB at 6 bar pressure, with no impact on blowing power.
-	EW-470K38	Double nipple (1/4" x M12x1.25 male thread).
9	EW-470K39	BLOWSTAR nozzle (with double nipple) features very low noise level, down to hardly 74 dB at 6 bar pressure, with no impact on blowing power.
10	EW-470K12	110 mm bent extension nozzle, 2.3 mm diameter, nickel-plated steel.
11	EW-470K43	SAFETYSTAR 120 mm bent extension nozzle, nickel-plated steel, noise reduction down to 80 dB.
12	EW-105K16A	110 mm bent extension nozzle, nickel-plated brass.
	EW-105K14A	160 mm bent extension nozzle, nickel-plated brass.
	EW-105K15A	260 mm bent extension nozzle, nickel-plated brass.
13	EW-105K103	115 mm straight extension nozzle, nickel-plated brass.
	EW-105K104	165 mm straight extension nozzle, nickel-plated brass.
	EW-105K105	265 mm straight extension nozzle, nickel-plated brass.
	EW-105K107	415 mm straight extension nozzle, nickel-plated brass.
14	EW-26915	Safety shield, 70 mm diameter (to be mounted between nozzle and gun).

## MACHINES AND ACCESSORIES - pneumatic accessories

### EWO hand tyre inflators


			
pic.	code	connector	description
1	EW-471221	lever	
2	EW-471223	clip	
3	EW-471222	double-sided push-on	
4	EW-471301	angle extension	
			<p>Hand-held tyre inflator designed for inflating tyres with air. It is equipped with 63 mm pressure gauge (accuracy class 1.6) in a rubber protection cover. This tyre inflator cannot be calibrated. A full range of accessories and spare parts is available (see: Hand tyre inflators - accessories).</p> <p>Material: blue polyamide (PA6 GK30).</p> <p>Connection: EUROSTANDARD 7.2 plug.</p> <p>Max. working press.: 10 bar.</p> <p>Working temp.: from -10°C up to +50°C.</p>


			
pic.	code	connector	description
1	EW-356121	lever	
2	EW-356123	clip	
3	EW-356122	double-sided push-on	
1	EW-356111*	lever	
2	EW-356113*	clip	
3	EW-356112*	double-sided push-on	
			<p>Hand-held tyre inflator designed for inflating tyres with air and nitrogen. It is equipped with 63 mm pressure gauge (accuracy class 1.0) in a rubber protection cover with double scale (bar, psi). This tyre inflator cannot be calibrated. A full range of accessories and spare parts is available (see: Hand tyre inflators - accessories).</p> <p>Material: aluminium.</p> <p>Connection: EUROSTANDARD 7.2 plug (* - DN 6 hose tail).</p> <p>Working press.: up to 10 bar.</p> <p>Max. working press.: 12 bar.</p> <p>Working temp.: from -10°C up to +60°C.</p>



## MACHINES AND ACCESSORIES - pneumatic accessories

### EWO hand tyre inflators

			
<b>AIRMASTER PREMIUM</b>			
pic.	code	connector	description
1	EW-356221	lever	<p>Hand-held tyre inflator designed for inflating tyres with air and nitrogen. It is equipped with 63 mm pressure gauge (accuracy class 1.0) in a rubber protection cover with double scale (bar, psi). Calibrated - recalibration required every 2 years (Directive 86/217/EEC). A full range of accessories and spare parts is available (see: Hand tyre inflators - accessories).</p> <p>Material: aluminium.</p> <p>Connection: EUROSTANDARD 7.2 plug.</p> <p>Working press.: up to 10 bar.</p> <p>Max. working press.: 12 bar.</p> <p>Working temp.: from -10°C up to +60°C.</p>
2	EW-356223	clip	
3	EW-356222	double-sided push-on	

			
<b>AIRSTAR</b>			
pic.	code	connector	description
1	EW-245201	lever	<p>Hand-held tyre inflator designed for inflating tyres with air and nitrogen. It is equipped with 80 mm pressure gauge (accuracy class 1.0) in a polyethylene protection cover with double scale (bar, psi). A calibrated version requires recalibration every 2 years (Directive 86/217/EEC). A full range of accessories and spare parts is available (see: Hand tyre inflators - accessories).</p> <p>Material: rubber-coated aluminium.</p> <p>Connection: EUROSTANDARD 7.2 plug.</p> <p>Working press.: up to 12 bar.</p> <p>Max. working press.: 12 bar.</p> <p>Working temp.: from -10°C up to +60°C.</p> <p>* without calibration.</p>
2	EW-245261	clip	
3	EW-245211	double-sided push-on	
1	EW-245241*	lever	
2	EW-245271*	clip	
3	EW-245251*	double-sided push-on	

## MACHINES AND ACCESSORIES - pneumatic accessories

### EWO hand tyre inflators



**EUROAIR**

pic.	code	connector	operating pressure	description  Hand-held tyre inflator designed for inflating tyres with air and nitrogen. Includes a pressure gauge 80 mm (accuracy class 1.0) in a polyethylene cover with double scale (bar, psi). A calibrated version requires recalibration every 2 years (Directive 86/217/EEC). A full range of accessories and spare parts is available (see: Hand tyre inflators - accessories). Material: aluminium. Connection: EUROSTANDARD 7.2 plug. Working temp.: from -10°C up to +60°C. * without calibration.
1	EW-151200	lever	0 ÷ 4 bar (cars)	
2	EW-151260	clip		
3	EW-151210	double-sided push-on		
1	EW-151201	lever	0 ÷ 12 bar (cars and trucks)	
2	EW-151261	clip		
3	EW-151211	double-sided push-on		
1	EW-151243*	lever	0 ÷ 25 bar (special vehicles, planes)	
3	EW-151253*	double-sided push-on		

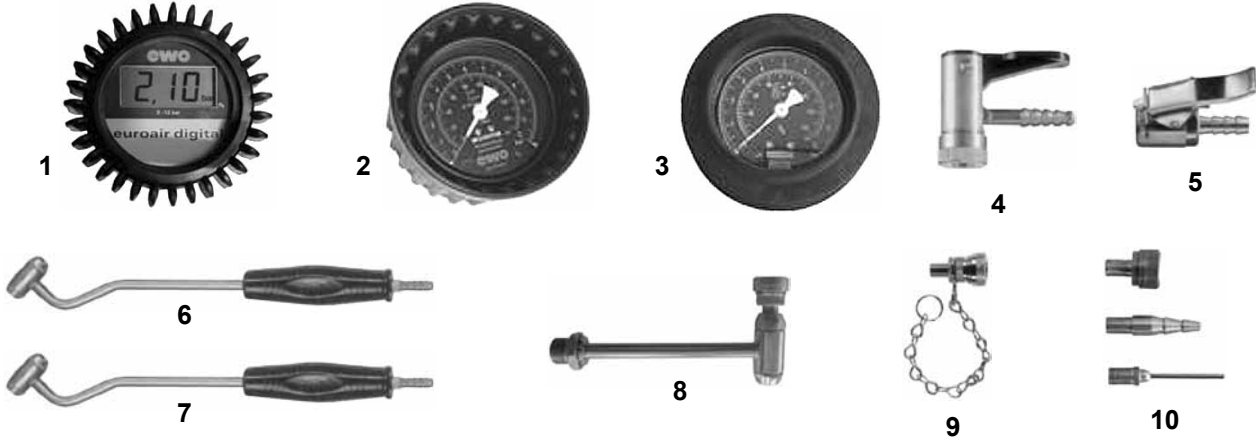


**EUROAIR  
DIGITAL**

pic.	code	connector	description  Hand-held tyre inflator designed for inflating tyres with air and nitrogen. Approved by PTB (National Metrology Institute of Germany). Includes a digital pressure gauge 80 mm (display resolution: every 0.05 bar) in a rubber protection cover. The display turns on automatically when inflating starts. It turns off after 20 seconds of stand-by. A full range of accessories and spare parts is available (see: Hand tyre inflators - accessories). Material: aluminium. Display: LCD (digits: 15 mm high). Power supply: lithium battery 3V CR2450. Connection: EUROSTANDARD 7.2 plug. Working press.: up to 12 bar. Working temp.: from -10°C up to +60°C. * without calibration.
1	EW-152201	lever	
2	EW-152261	clip	
3	EW-152211	double-sided push-on	
1	EW-152241*	lever	
2	EW-152271*	clip	
3	EW-152251*	double-sided push-on	

## MACHINES AND ACCESSORIES - pneumatic accessories

### EWO hand tyre inflators - accessories

		
pic.	code	description
1*	EW-1523	Digital pressure gauge 80 mm, in a protection cover, 0 ÷ 12 bar.
2**	EW-151139	Pressure gauge 80 mm, in a protection cover, 0 ÷ 4 bar.
2**	EW-151140	Pressure gauge 80 mm, in a protection cover, 0 ÷ 12 bar.
2**	EW-151141	Pressure gauge 80 mm, in a protection cover, 0 ÷ 25 bar.
3***	EW-35619	Pressure gauge 63 mm, in a protection cover, 0 ÷ 10 bar.
4	EW-15125	Lever connector with a fitting for DN 6 mm hose, equipped with a special clip which holds the connector in the right position and with a pin to release the valve. A rubber seal and a metal cap is included. Supplied as a set with EAR CLIP clamp.
5	EW-151183	Clip connector with a fitting for DN 6 mm hose, equipped with a special clip which holds the connector in the right position. Available as a set with EAR CLIP clamp.
6	EW-15151	Double sided push-on connector with a fitting for DN 6 mm hose, enables inflating tyres from the inside or outside of a wheel. A very comfortable handle facilitates operation. The connector has no special clips, the length is well adjusted to allow easy and convenient access to a hard-to-reach tyre valve. Supplied as a set with EAR CLIP clamp.
7	EW-151K50	Double sided push-on connector designed to be attached to a clip connector. It enables inflating tyres from the inside or outside of a wheel. A very comfortable handle facilitates operation. The connector has no special clips, the length is well adjusted to allow easy and convenient access to a hard-to-reach tyre valve.
8	EW-471K24	90° angle extension for bicycle and car valves, mounted directly to the body of PNEULIGHT tyre inflator. Ends with BSP 1/4" male thread connection. It has a rubber seal and a metal cap with 6 mm hole diameter at one end, and a plug with rubber seal and 8 mm hole diameter at the other end.
9	EW-35618	A bicycle nipple with a chain, mounted to a clip connector. A rubber seal and a metal cap with 8 mm hole diameter is included.
10	EW-471K17	A set of three nipples, mounted directly to a clip connector. Intended to inflate air mattresses, balls, bicycle tyres and car tyres.

\* - for EUROAIR DIGITAL hand tyre inflator.

\*\* - for EUROAIR hand tyre inflator

\*\*\* - for PNEULIGHT, AIRMASTER STANDARD, AIRMASTER PREMIUM hand tyre inflators.

## MACHINES AND ACCESSORIES - pneumatic accessories

### Automatic tyre inflators



#### AIRQUICK

**Tank:** 6 liters capacity,  
**Max. pressure:** 16 bar  
**Press. gauge:** Ø 160 mm, 0 ÷ 10 bar  
**Weight:** 7.1 kg  
**Working temp.:** From -10°C up to +60°C

A portable device for mobile operations. Equipped with an air tank allows to inflate the tyres of cars, trucks and motorcycles. Large pressure gauge is fitted at 20° angle to facilitate correct pressure readings. A built-in air tank allows operation independent of compressed air supply. Tank approval number CE 2004-0036.

code	connector	description
EW-35020	double-sided push-on	AIRQUICK tyre inflator, calibrated
EW-35021	double-sided push-on	AIRQUICK tyre inflator, without calibration
EW-35013	-	AIRQUICK tank filling valve, 1/2" male thread
EW-35016	-	AIRQUICK tank filling valve with elbow, 1/2" female thread
EW-600	-	Pressure gauge for AIRQUICK device, 160 mm 0 ÷ 10 bar
EW-350K161	double-sided push-on	Hose with handle and AIRQUICK connector for inflating, L = 1 m



#### AIRMATE / PNEUMATE

**Material:** Housing - aluminium  
 Display - polycarbonate  
**Voltage:** 90 ÷ 230 V / 50 ÷ 60 Hz (adjustable)  
**Power:** 16 W  
**Protection class:** IP 54  
**Accuracy:** ± 0.5%  
**Weight:** 2.5 kg  
**Dimensions:** Ø 240 x 100 mm  
**Working temp.:** From -40°C up to +70°C

A stationary electronic tyre inflator for various vehicles - automatically inflates the tyres according to the target pressure value setting. Suitable for indoor and outdoor operation, resistant to weather conditions. Available in two versions: AIRMATE for petrol stations and PNEUMATE with more functions (e.g. inflating with nitrogen) designed for service stations, tyre fitting, repair and replacement services, vehicle inspection stations, etc. Approved by PTB (National Metrology Institute of Germany) and CE marked. A hose with a connector for tyres, and other accessories must be ordered separately.

code	max. filling pressure [bar]	supply pressure [bar]	description
EW-47710	5.5	7 ÷ 16	AIRMATE stationary tyre inflator.
EW-47730	10	12 ÷ 16	AIRMATE stationary tyre inflator.
EW-47720	10	12 ÷ 16	PNEUMATE stationary tyre inflator.
EW-477K34	-	-	Rubber hose DN 6, L=10 m with tyre connector.
EW-477K29	-	-	PVC hose DN 6, L=10 m with tyre connector.
EW-477K35	-	-	PVC hose DN 6.5, L=10 m with tyre connector.
EW-477K43	-	-	PU spiral hose DN 6.5, L=5 m with tyre connector.
EW-477K42	-	-	PU spiral hose DN 6.5, L=2.5 m with tyre connector.
EW-477K31	-	-	Connector for tyre inflating.

## MACHINES AND ACCESSORIES - pneumatic accessories

### EWO impact wrench



#### 741 Series

Top quality impact wrench designed for mounting and dismounting wheels - for service stations, car workshops, tyre fitting, repair and replacement services. As an assembly tool, it is commonly used when handling steel constructions, machines, etc.

Basic features:

- TWIN HAMMER - twin impact mechanism,
- housing made of durable composite materials,
- handle covered with anti vibration material,
- low noise level - 83dB(A),
- 3-stage power settings for different torque.


parameters	code		
	EW-741130	EW-741160	EW-741180
Square drive	3/8" (10 mm)	1/2" (13 mm)	1/2" (13 mm)
Maximum free speed [rev./min]	11000	11000	7000
Working torque [Nm]	583	624	1112
Maximum free torque [Nm]	678	678	1756
Working torque range [Nm]	34 ÷ 338	34 ÷ 338	68 ÷ 746
Average air consumption [l/min]	113	113	113
Recommended working pressure [bar]	6.2	6.2	6.3
Connection [inch]	1/4 BSP female	1/4 BSP female	1/4 BSP female
Weight [kg]	1.2	1.2	1.9


### Accessories

picture	code	description
	EW-741100	Set of 1/2" sockets: 17, 19 and 21 mm in a box. Compatible with EW-741160 and EW-741180 impact wrench.
	EW-31710	Small lubricator intended to lubricate pneumatic tools with oil mist in order to protect it against corrosion, reduce friction and prevent premature wearing of parts. Oil (code: EW-583) must be ordered separately Working press.: 0.5 ÷ 10 bar, Tank volume: 5.5 cm <sup>3</sup> , Dimensions: 35 x 60 mm.
	EW-E40702	Flexible hose assembly comprised of SOFTPLUS hose, with 1/4" BSP female thread fitting and EUROSTANDARD 7.2 plug. Intended to connect pneumatic tools. Dampens vibration. Diameter: 9 mm, Length: 200 mm, Working press.: up to 15 bar.

## MACHINES AND ACCESSORIES - pneumatic accessories

### Water and coolant guns for CNC machines


	code	connection	description
	EW-40404	13 mm hose tail	MULTICLEAN water gun with adjustable flow control and trigger lock. Solid brass construction. Particularly recommended for CNC machines, coolants and cleaning. Working press.: up to 40 bar. Working temp.: from +5°C up to +90°C. Weight: 1.05 kg.
	EW-40406	19 mm hose tail	
	EW-40430	1/2" female thread	
	EW-160K4	Ø 2 mm nozzle	
	EW-160K4A	Ø 4 mm nozzle	Nozzle for MULTICLEAN gun. Ø 2 mm nozzle as a standard.

	code	connection	description
	EW-41204	13 mm hose tail	PROFICLEAN water gun with adjustable flow control and trigger lock. Robust and lightweight aluminium construction. Particularly recommended for CNC machines, coolants and cleaning. Working press.: up to 25 bar. Working temp.: from +5°C up to +90°C. Weight: 0.75 kg.
	EW-41206	19 mm hose tail	
	EW-41230	1/2" female thread	
	EW-412K4	Ø 2 mm nozzle	
	EW-412K5	Ø 4 mm nozzle	Nozzle for PROFICLEAN gun. Ø 2 mm nozzle as a standard.

Pressure dependence of the flow rate, with a fully open valve


nozzle size	pressure [bar]					
	4	6	10	16	25	40
Ø 2 mm	4 l/min	5 l/min	6.3 l/min	8 l/min	10 l/min	13 l/min
Ø 4 mm	16 l/min	20 l/min	25 l/min	32 l/min	40 l/min	50 l/min

### Gun for chassis cleaning


	code	connection	description
	EW-355511	quick release coupling plug	Water gun designed for chassis cleaning. Container: - EW-355511 - plastic 0.7 l. - EW-355521 - metal 0.7 l. - EW-355531 - none Max. pressure: 10 bar. Working pressure: 2÷8 bar. Working temp.: +5°C up to +50°C.
	EW-355521	quick release coupling plug	
	EW-355531	quick release coupling plug	

## MACHINES AND ACCESSORIES - pneumatic accessories

### Gun for sand blasting

	code	connection	description
	EW-39012	quick release coupling plug	<p>Gun designed to remove rust and dirt from places inaccessible for e.g. grinders, using mineral abrasive material. Grain diameter range 0.1 ÷ 0.8 mm depending on the surface that is sand blasted.</p> <p>Nozzle diameter: 4 mm. Max. pressure.: 10 bar. Working pressure: 4÷7 bar. Working temp.: 0°C up to +50°C.</p>
	EW-39013	quick release coupling plug	<p>EW-39012 - gun with 0.7 l plastic container. EW-39013 - gun with 1.5 m suction hose.</p>

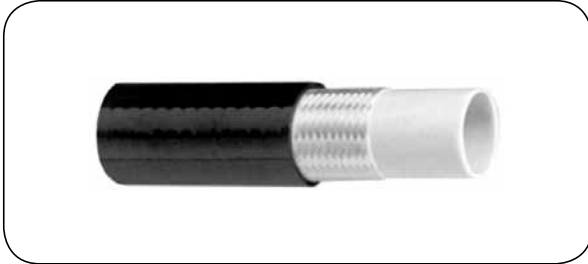
### Gun for waxing

	code	connection	description
	EW-125241	quick release coupling plug	<p>Aluminium gun with Ø 3 mm nozzle with adjustable flow control. Uses vacuum pressure to suck the fluid of low viscosity from the container.</p>
	EW-125341	quick release coupling plug	<p>Container: plastic, volume 0.7 l. Nozzle diameter: 3 mm. Max. pressure: 10 bar. Working pressure: 2÷6 bar. Working temp.: +5°C up to +50°C.</p> <p>EW-125341 - gun with 360° rotating nozzle. EW-1253363 - gun with fitting for suction hose.</p>
	EW-125363	quick release coupling plug	

## Lubrication techniques

Lubrication process consists in interposing a lubricant between the two contacting surfaces in order to reduce friction and wear process. Knowledge of the principles of a lubrication process allows to design machines that consume minimum energy during operation and feature reliability and durability. The way a lubricant is applied is called a lubrication technique.

### Thermoplastic hoses (grease)

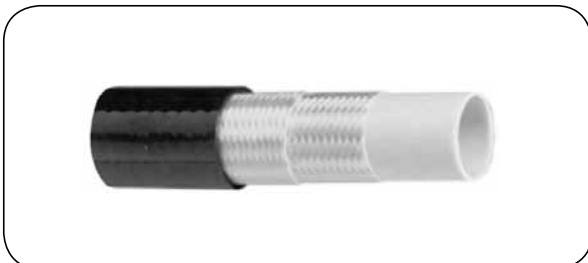


## 130 GREASING

**Internal layer:** Thermoplastic polymer  
**Reinforcement:** Single synthetic fibre braid  
**External layer:** Thermoplastic polymer (for 130C TPU)  
**Working temp.:** From -40°C up to +60°C (for 130C from -20°C up to +60°C)

Lightweight, flexible hose for high pressure grease systems.  
 Assembly: Use special fittings.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
TO-130A-04	4	8.8	400	1000	35	6.00
TO-130B-04	4	10	400	1000	35	9.00
TO-130C-04	4	8.3	400	1000	25	5.00



## EP 1C

**Internal layer:** Polyethylene compound  
**Reinforcement:** Two polyester braids  
**External layer:** Polyurethane  
**Working temp.:** From -20°C up to +40°C

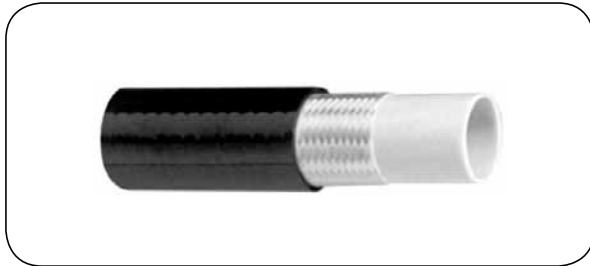
Lightweight, flexible hose for high pressure grease systems.  
 Standards: DIN 1283.  
 Assembly: Use special fittings.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
MC-EP1C030A-04	4	7.6	225	900	20	3.70
MC-EP1C010B-05	5	9.3	225	900	30	5.10
MC-EP1C010C-06	6.6	11.8	200	800	40	7.85



## Lubrication techniques

### Thermoplastic hoses (grease)



### GR 7 / GR 8

- Internal layer:** Polyester (PEE), polyethylene (PE) or polyamide (PA)  
**Reinforcement:** Polyester braid (GR 7) or aramid fibre braid (GR 8)  
**External layer:** Synthetic rubber (PZ) or polyurethane (PU) or polyamide (PA)  
**Working temp.:** From -20°C up to +60°C

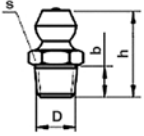
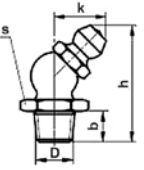
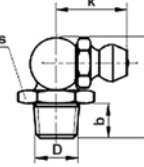
Lightweight, flexible hose designed for high pressure grease systems.  
 Standards: DIN 1283 (hose marked with \*).  
 Assembly: Use special fittings.

code	internal / external layer	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/100 m]
ZC-GR7-H10846*	PEE / PZ	4	10.8	400	1000	35	9.70
ZC-GR7-H10246*	PEE / PZ	4	10.2	400	1000	35	7.90
ZC-GR7-H84000	PEE / PU	4	8.1	200	800	35	4.50
ZC-GR7-H94000	PEE / PU	4	9.1	250	1000	40	6.00
ZC-GR7-PE8440	PE / PU	4	8.4	200	800	35	4.50
ZC-GR7-PE1084	PE / PU	4	10.8	200	800	35	8.00
ZC-GR7-PE1256	PE / PZ	5	12	150	600	40	11.00
ZC-GR7-PE1460	PE / PZ	6.6	14	200	800	65	14.00
ZC-GR8-H10846*	PEE / PZ	4	10.8	400	1500	35	9.50
ZC-GR8-PA8243*	PA / PA	4	8.2	400	1300	35	4.20





# MACHINES AND ACCESSORIES - protection and sealing

## Lubrication techniques

### Grease nipples

picture	code	D thread	b [mm]	h [mm]	k [mm]	s [mm]	description
	AR-H1-02	1/8" BSPT	6.5	17.5	-	14	Straight grease nipple DIN71412 A. Material: zinc-plated steel.
	AR-H1-04	1/4" BSPT	6.5	17.5	-	14	
	AR-H1-M6	M6x1	5.5	15	-	7	
	AR-H1-M8	M8x1	5.5	15.5	-	9	
	AR-H1-M10	M10x1	5.5	15	-	11	
	AR-H2-M6	M6x1	5.5	23.5	10.5	9	45° grease nipple DIN71412 B. Material: zinc-plated steel.
	AR-H2-M8	M8x1	5.5	23.5	10.5	9	
	AR-H2-M10	M10x1	5.5	25	11.5	11	
	AR-H3-M6	M6x1	5.5	18	13	9	90° grease nipple DIN71412 C Material: zinc-plated steel.
	AR-H3-M8	M8x1	5.5	18	13	9	
	AR-H3-M10	M10x1	5.5	20	14	11	

### Accessories

picture	code	description
	AR-KO-RED	Dust cap of a grease nipple, PVC, red.
	AR-KS4-M10	Grease nipple coupling with M10x1 female thread, zinc-plated, DIN 71412.
	AR-SR500X	Manual lever grease nipple 75/PK, silver, 500 g without accessories.
	AR-SR500-340GLN	Manual lever grease nipple 75/PK, silver, 500 g with hose and nozzle.
	AR-SR500-110G	Manual lever grease nipple 75/PK, silver, 500 g with pipe and nozzle.
	AR-SSR500	Grease nipple cartridge 75/PK, 400 g.

## MACHINES AND ACCESSORIES - protection and sealing

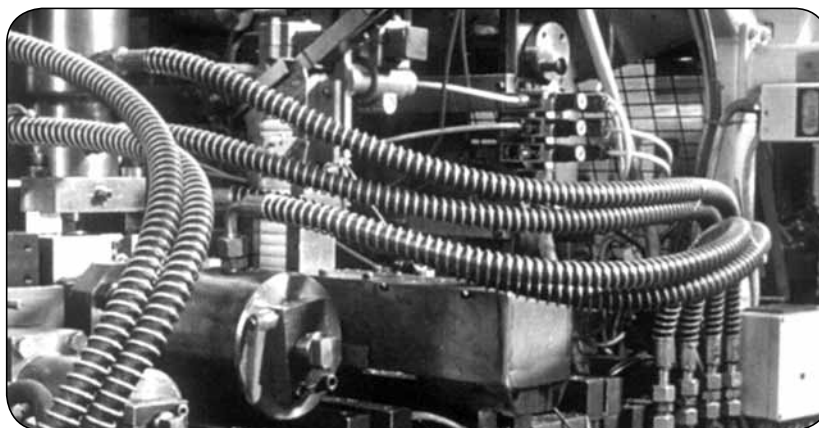


### SPRING

**Material:** Galvanized spring steel

Protective spiral made of steel wire designed to protect hoses (cables) against abrasion, kinking and crushing. Standard length 5 m.

code	I.D. [mm]	distance between coils [mm]	wire diameter [mm]
RF-SPRING-10	10	5	1.6
RF-SPRING-12	12	5	1.6
RF-SPRING-14	14	5	1.6
RF-SPRING-15	15	5	1.6
RF-SPRING-17	17	5	1.6
RF-SPRING-19	19	5	1.6
RF-SPRING-20	20	5	1.6
RF-SPRING-22	22	6	2
RF-SPRING-24	24	6	2
RF-SPRING-25	25	6	2
RF-SPRING-27	27	6	2
RF-SPRING-29	29	6	2
RF-SPRING-30	30	6	2
RF-SPRING-33	33	10	3
RF-SPRING-34	34	10	3
RF-SPRING-37	37	10	3
RF-SPRING-40	40	10	3
RF-SPRING-42	42	10	3
RF-SPRING-46	46	10	3
RF-SPRING-48	48	10	3
RF-SPRING-50	50	10	3



## MACHINES AND ACCESSORIES - protection and sealing

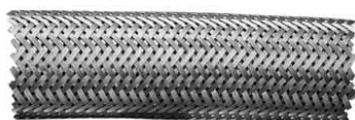


### FLAT G

**Material:** Galvanized steel

Protective spiral made of steel band designed to protect hoses (cables) against abrasion, kinking and crushing.

code	I.D. [mm]	band thickness [mm]	band width [mm]	distance between coils [mm]	standard length [m]
RF-GFLAT-16	16	1	5	3	4
RF-GFLAT-18	18	1	5	3	4
RF-GFLAT-20	20	1	5	3	4
RF-GFLAT-22	22	1	5	3	4
RF-GFLAT-24	24	1	5	3	4
RF-GFLAT-26	26	1	5	3	4
RF-GFLAT-28	28	1	5	3	4
RF-GFLAT-30	30	1	5	3	4
RF-GFLAT-32	32	1	5	3	4
RF-GFLAT-34	34	1	5	3	4
RF-GFLAT-38	38	1	5	3	4
RF-GFLAT-40	40	1	5	3	4
RF-GFLAT-42	42	1	5	3	4
RF-GFLAT-47	47	1	5	3	4
RF-GFLAT-52	52	1	5	3	2
RF-GFLAT-60	60	1	5	3	2
RF-GFLAT-68	68	1	5	3	1
RF-GFLAT-72	72	1	5	3	1



### 304 B

**Material:** AISI 304 steel

**Type:** Standard

Steel braids are used as an external hose shield in order to protect hoses against mechanical damage, abrasion, etc. They can be clamped with clamping bands or ferrules.

code	hose I.D. [inch]	braid I.D. [mm]
AT-304B-010	3/8	16.5
AT-304B-012	1/2	21.5
AT-304B-020	3/4	28.5
AT-304B-025	1	36
AT-304B-032	1.1/4	43.5
AT-304B-040	1.1/2	53
AT-304B-050	2	67.5
AT-304B-065	2.1/2	81
AT-304B-080	3	96
AT-304B-100	4	-
AT-304B-125	5	-
AT-304B-150	6	-
AT-304BB-200	8	-
AT-304BB-250	10	-

## MACHINES AND ACCESSORIES - protection and sealing



### SPIRALINA

**Material:** Rigid PVC (exhibits memory effect)  
**Working temp.:** From -10°C up to +60°C  
 (with peaks up to +70°C)

Protective spiral designed to protect hoses (cables) against abrasion and squeezing. Also used to wrap group of hoses (cables) to form bundles. Resistant to weather influence, UV radiation, ozone, flame (according to UL94VO), oil, diesel oil, water. Not conductive - surface conductivity  $10^{10} \Omega$ .

code	I.D. [mm]	O.D. [mm]	band thickness [mm]	band width [mm]	range diameter [mm]	weight [kg/m]
SPIRALINA FLEX						
ME-SPIRALINAFX-013	13	15.4	1.2	10	12 ÷ 18	0.05
ME-SPIRALINAFX-016	16	18.4	1.2	12	16 ÷ 26	0.06
ME-SPIRALINAFX-020	20	23.6	1.8	14.5	20 ÷ 27	0.12
ME-SPIRALINAFX-024	24	27.3	1.9	15	23 ÷ 30	0.16
ME-SPIRALINAFX-027	27	30.8	1.9	16	27 ÷ 35	0.20
ME-SPIRALINAFX-030	30	34.4	2.2	18	30 ÷ 45	0.23
ME-SPIRALINAFX-035	35	40	2.2	20.5	35 ÷ 60	0.28
ME-SPIRALINAFX-044	43.5	48	2.3	23	45 ÷ 75	0.40
SPIRALINA						
ME-SPIRALINA-056	56	63	3.5	26	50 ÷ 90	0.85
ME-SPIRALINA-065	64	72.5	4.3	30	60 ÷ 120	1.15
ME-SPIRALINA-080	81	91	5	35	75 ÷ 200	1.70



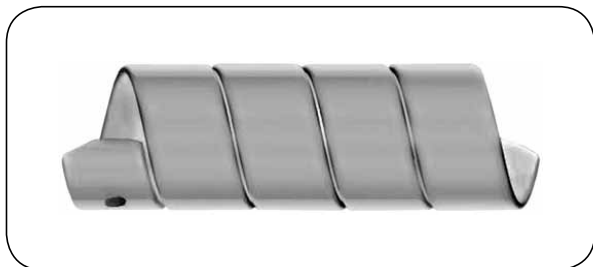
### BINDING SPIRAL

**Material:** Black polyethylene (PE)  
**Working temp.:** From -30°C up to +80°C

Lightweight, very flexible protective spiral made of a band cut from a PE pipe. Designed to protect electric cables and hoses and to wrap them to form bundles. Resistant to acids, oils, solvents and UV radiation.

code	I.D. [mm]	O.D. [mm]	band thickness [mm]	band width [mm]	coil length [m]
SF-BINDING-06	4	6	1	5.5	100
SF-BINDING-08	6	8	1	5.5	50
SF-BINDING-10	8	10	1	8	50
SF-BINDING-12	10	12	1	8	50
SF-BINDING-15	12.5	15	1.25	10	50
SF-BINDING-20	16.6	20	1.7	12.5	25
SF-BINDING-25	21	25	2	12.5	25
SF-BINDING-32	28	32	2	15	25

## MACHINES AND ACCESSORIES - protection and sealing



### PROTECTOR

**Material:** Polyethylene (HDPE)  
**Working temp.:** From -50°C up to +100°C

A protective spiral designed to protect hoses (cables) against abrasion, impact and kinking. Also used to wrap several hoses (cables) in order to form a bundle. Improves the visibility of covered hoses or cables. Resistant to acids, oils, solvents and UV radiation. There are holes at both ends of each spiral with an external diameter from 75 mm to 140 mm, which allow joining several protectors together (not coils though). Can be installed either before or after hose assembly installation. Supplied in 1, 1.5 and 6 m lengths in yellow and black (other colours available).

code *	I.D. [mm]	O.D. [mm]	band thickness [mm]	band width [mm]	weight [kg/m]	coil length [m]	hose O.D. [mm]
SF-PROTECTOR-012	9.6	12	1.2	10.5	0.04	25	9 ÷ 13
SF-PROTECTOR-016	13.4	16	1.3	12	0.06	25	13 ÷ 18
SF-PROTECTOR-020	16	20	2	20	0.09	25	16 ÷ 22
SF-PROTECTOR-025	20.6	25	2.2	25	0.15	25/50	20 ÷ 27
SF-PROTECTOR-032	27	32	2.5	22	0.19	25/50	27 ÷ 36
SF-PROTECTOR-040	34.6	40	2.7	24	0.30	25	34 ÷ 44
SF-PROTECTOR-050	43.2	50	3.4	30	0.34	25/50	43 ÷ 55
SF-PROTECTOR-063	55.6	63	3.7	37	0.65	25	55 ÷ 67
SF-PROTECTOR-075	66.2	75	4.4	45	0.73	20	66 ÷ 80
SF-PROTECTOR-090	80.2	90	4.9	45	1.21	20	80 ÷ 98
SF-PROTECTOR-110	99	110	5.5	50	1.76	15	99 ÷ 115
SF-PROTECTOR-125	113.2	125	5.9	52	2.05	12	113 ÷ 130
SF-PROTECTOR-140	127	140	6.5	55	2.51	10	125 ÷ 155

- yellow - add Y to the code, black - add BK to the code



### FLEX SPIRAL

**Material:** Polyethylene (HDPE)  
**Working temp.:** From -50°C up to +100°C

Extremely flexible variation of PROTECTOR spiral, with smaller band width and thinner wall. For application in places where the ease of spiral installation on already mounted assemblies is of the highest importance. Supplied only in 25 m coils in yellow and black.

code *	I.D. [mm]	O.D. [mm]	band thickness [mm]	band width [mm]	weight [kg/m]	coil length [m]
SF-FLEX-020	16.8	20	1.6	16	0.08	25
SF-FLEX-025	21.6	25	1.7	19	0.10	25
SF-FLEX-032	28	32	2	22	0.18	25
SF-FLEX-050	44.8	50	2.6	24	0.35	25
SF-FLEX-075	68.6	75	3.2	35	0.65	20

- yellow - add Y to the code, black - add BK to the code

## MACHINES AND ACCESSORIES - protection and sealing



### ABRA

**Material:** Polyethylene (HDPE)  
(black outside, yellow inside)

**Working temp.:** From -50°C up to +100°C

ABRA, 2-colour version of PROTECTOR spiral with wear indicator. It is black outside and yellow inside. ABRA helps to identify the spots that require careful observation - once the black layer wears off, yellow shows and warns that the spiral may soon need to be replaced with a new one. Available in coils only.

code	I.D. [mm]	O.D. [mm]	band thickness [mm]	band width [mm]	weight [kg/m]	coil length [m]	hose O.D. [mm]
SF-PRO-ABRA-020	16	20	2	20	0.09	25	16 ÷ 22
SF-PRO-ABRA-025	20.6	25	2.2	21.5	0.15	25	20 ÷ 27
SF-PRO-ABRA-032	27.0	32	2.5	22	0.19	25	27 ÷ 36
SF-PRO-ABRA-040	34.6	40	2.7	24	0.30	25	34 ÷ 44
SF-PRO-ABRA-050	43.2	50	3.4	30	0.40	25	43 ÷ 55
SF-PRO-ABRA-063	55.6	63	3.7	27	0.65	25	55 ÷ 67
SF-PRO-ABRA-075	66.2	75	4.4	42	0.73	20	66 ÷ 80



### ASTA

**Material:** Polyethylene (HDPE)  
(black outside, green inside)

**Working temp.:** From -50°C up to +100°C

ASTA, 2-colour version of PROTECTOR spiral. Entirely antistatic, designed for underground operation and for other applications in special environments that require surface conductivity. Average surface resistance: 8 kΩ/m². It is black outside and green inside. Available in coils only.

code	I.D. [mm]	O.D. [mm]	band thickness [mm]	band width [mm]	weight [kg/m]	coil length [m]	hose O.D. [mm]
SF-PRO-ASTA-020	16	20	2	20	0.11	25	16 ÷ 22
SF-PRO-ASTA-025	20.6	25	2.2	21.5	0.17	25	20 ÷ 27
SF-PRO-ASTA-032	27	32	2.5	22	0.23	25	27 ÷ 36
SF-PRO-ASTA-040	34.6	40	2.7	24	0.29	25	34 ÷ 44
SF-PRO-ASTA-050	43.2	50	3.4	30	0.41	25	43 ÷ 55
SF-PRO-ASTA-063	55.6	63	3.7	27	0.70	25	55 ÷ 67
SF-PRO-ASTA-075	66.2	75	4.4	42	0.88	20	66 ÷ 80
SF-PRO-ASTA-090	80.2	90	4.9	45	1.20	20	80 ÷ 98
SF-PRO-ASTA-110	99	110	5.5	50	1.61	15	99 ÷ 115

## MACHINES AND ACCESSORIES - protection and sealing



### MINE SPIRAL

**Material:** Brown-grey polyethylene (HDPE)  
**Working temp.:** From -50°C up to +100°C

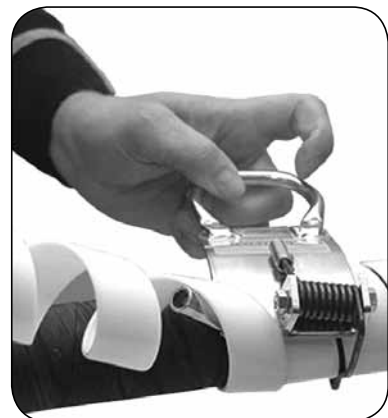
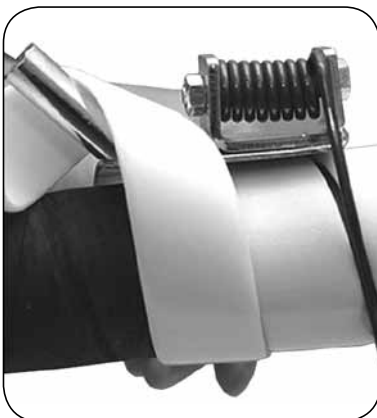
MINE SPIRAL is a version of PROTECTOR spiral with special additives reducing flammability and ignitability. It is intended for machines and many other applications in mines. It is approved for operations in mines as flame resistant - MSHA IC-271 issued by Mine Safety and Health Administration. Available in coils only. MINE SPIRAL+ version is entirely antistatic.

code	I.D. [mm]	O.D. [mm]	band thickness [mm]	band width [mm]	weight [kg/m]	coil length [m]	hose O.D. [mm]
SF-PRO-MSHA-020	16	20	2	20	0.11	25	16 ÷ 22
SF-PRO-MSHA-025	20.6	25	2.2	21.5	0.17	25	20 ÷ 27
SF-PRO-MSHA-032	27	32	2.5	22	0.23	25	27 ÷ 36
SF-PRO-MSHA-040	34.6	40	2.7	24	0.29	25	34 ÷ 44
SF-PRO-MSHA-050	43.2	50	3.4	30	0.41	25	43 ÷ 55
SF-PRO-MSHA-063	55.6	63	3.7	27	0.70	25	55 ÷ 67
SF-PRO-MSHA-075	66.2	75	4.4	42	0.88	20	66 ÷ 80
SF-PRO-MSHA-090	80.2	90	4.9	45	1.20	20	80 ÷ 98
SF-PRO-MSHA-110	99	110	5.5	50	1.61	15	99 ÷ 115

### Mounting protective spirals

Protective hose spirals are mounted on hoses using special tools. They are available in two sizes depending on the outer diameter of the hose protective spiral. The spring allows keeping regular distance between the subsequent coils of the spiral.

SF-HAKOP - for hose protective spirals with O.D. from 20 up to 50 mm.  
 SF-HAKOI - for hose protective spirals with O.D. from 63 up to 140 mm.





## MACHINES AND ACCESSORIES - protection and sealing



### SAFE SLEEVE

**Material:** Black polypropylene (not branded)

**Working temp.:** From -40°C up to +80°C

### SAFE SLEEVE MSHA

**Material:** Black polyester (branded)

**Working temp.:** From -40°C up to +120°C

A protective sleeve made of dense fabric intended to protect hydraulic or pneumatic hoses or hose assembly bundles. Excellent abrasion resistance (tested to EN ISO 12947-3), chemical and UV radiation resistance, low electrical conductivity. SAFE SLEEVE perfectly safeguards a hose operator in case of oil burst caused by the breaking hose. Meets the requirements of EN ISO 3457 and EN 12999 EN. MSHA-approved SAFE SLEEVE is suitable for operation in mines as flame resistant.

code	code	I.D. [mm]	width (flat) [mm]	recommended hose O.D. [mm]	standard length [m]
SF-SLRD-017	SF-SLRD-MSHA-017	17	30	14	50
SF-SLRD-023	SF-SLRD-MSHA-023	23	40	15	50
SF-SLRD-027	SF-SLRD-MSHA-027	27	45	22	50
SF-SLRD-030	SF-SLRD-MSHA-030	30	50	25	50
SF-SLRD-036	SF-SLRD-MSHA-036	36	60	30	50
SF-SLRD-039	SF-SLRD-MSHA-039	39	65	34	50
SF-SLRD-046	SF-SLRD-MSHA-046	46	75	40	50
SF-SLRD-055	SF-SLRD-MSHA-055	55	90	48	50
SF-SLRD-062	SF-SLRD-MSHA-062	62	100	55	50
SF-SLRD-078	SF-SLRD-MSHA-078	78	125	70	50
SF-SLRD-109	SF-SLRD-MSHA-109	109	175	100	50
SF-SLRD-125	SF-SLRD-MSHA-125	125	200	115	50



### Aluminium ferrules for attaching SAFE SLEEVES

code	O.D. [mm]	I.D. [mm]
SF-ALU-20X16	20	16
SF-ALU-25X21	25	21
SF-ALU-30X26	30	26
SF-ALU-35X31	35	31
SF-ALU-40X35	40	35
SF-ALU-45X38	45	38
SF-ALU-50X45	50	45



## SAFE STRIP

**Material:** Black polypropylene

**Working temp.:** From -40°C up to +80°C

Strips made of dense fabric designed to bind hose assemblies into bundles. They are branded with SAFE STRIP label.

Three versions are available:

- STRD (with Velcro®),
- STRDR (with Velcro® and a mounting eye),
- STFLL (with stainless steel buckle).

code	code	width [mm]	max. bundle diameter [mm]
SF-STRD-070	SF-STRDR-070	40	70
SF-STRD-100	SF-STRDR-100		100
SF-STRD-125	SF-STRDR-125		125
SF-STRD-155	SF-STRDR-155		155
SF-STRD-180	SF-STRDR-180		180

code	width [mm]	length [m]
SF-STFLL-050	25	500
SF-STFLL-100		1000
SF-STFLL-150		1500



## SAFE WRAP

**Material:** Black polyamide fabric coated with black polyurethane

**Working temp.:** From -20°C up to +120°C

Very strong wrap cover with Velcro® fasteners attached lengthwise. Very easy to install on hose bundles and to dismantle. The fabric of SAFE WRAP features excellent elongation resistance (EN ISO 13934-1) and 100% water repellence (EN 24920). SAFE WRAP meets the requirements of ISO 3457 standard (tested for porosity). It is highly resistant to abrasion. Other internal diameters also available.

code	I.D. [mm]	length [m]
SF-WRRD-040	40	10 ÷ 30
SF-WRRD-060	60	
SF-WRRD-080	80	
SF-WRRD-100	100	
SF-WRRD-120	120	

## MACHINES AND ACCESSORIES - protection and sealing

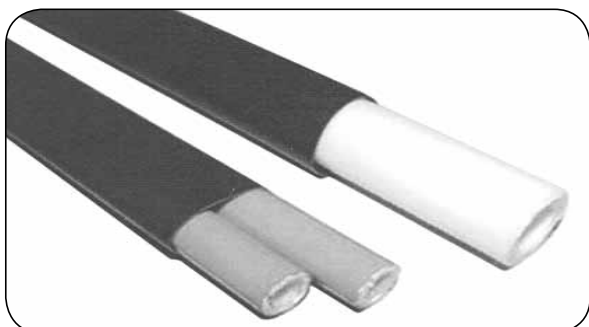


### GT 35

**Material:** Polyester  
**Working temp.:** Up to +100°C

Protective sleeve made of extremely dense polyester fabric. Designed for single hose or hose assembly bundle protection in hydraulic or pneumatic applications. Good resistance to mechanical impact, oils and organic products. Protects the hose and safeguards its operator in case of oil burst caused by hose bursting.

code	I.D. [mm]	width [mm]	weight [kg/m]	standard length [m]
ZC-GT-035	20	35	0.027	100
ZC-GT-040	22	40	0.032	100
ZC-GT-045	25	45	0.034	100
ZC-GT-050	28	50	0.038	100
ZC-GT-055	32	55	0.042	100
ZC-GT-060	35	60	0.045	100
ZC-GT-065	38	65	0.048	100
ZC-GT-080	45	80	0.060	100
ZC-GT-090	50	90	0.065	100
ZC-GT-120	70	120	0.096	100
ZC-GT-150	90	150	0.112	100



### GPVC

**Material:** PVC  
**Working temp.:** Up to +70°C

Protective sleeve made of PVC. Designed for single hose or hose assembly bundle protection in hydraulic or pneumatic applications. Protects the hose and safeguards its operator in case of oil burst caused by hose bursting.

code	I.D. [mm]	wall thickness [mm]	weight [kg/m]	standard length [m]
ZC-GPVC-10	10	0.5	0.026	150
ZC-GPVC-16	16	0.5	0.039	100
ZC-GPVC-20	20	0.6	0.058	100
ZC-GPVC-22	22	0.6	0.063	100
ZC-GPVC-25	25	0.6	0.072	100
ZC-GPVC-25S	25	1.5	0.157	100
ZC-GPVC-28	28	0.6	0.082	100
ZC-GPVC-30	30	0.6	0.087	50
ZC-GPVC-30S	30	1.5	0.187	50
ZC-GPVC-33	33	0.7	0.104	50
ZC-GPVC-33S	33	1.5	0.218	50
ZC-GPVC-38	38	0.7	0.135	50
ZC-GPVC-38S	38	1.5	0.285	50
ZC-GPVC-40	40	0.7	0.141	50
ZC-GPVC-45	45	0.7	0.144	50
ZC-GPVC-50	50	0.7	0.167	50
ZC-GPVC-55	55	0.7	0.184	50

## MACHINES AND ACCESSORIES - protection and sealing



### CABLE ISOL®

**Reinforcement:** Vulcanized synthetic cord  
**Internal layer:** Black SBR rubber  
**Working temp.:** From -30°C up to +80°C

Thin-walled protective hose intended for application in industry and welding machines. Other hose version, CABLE ISOL with non-conductive external layer is also available.

code	I.D. [mm]	O.D. [mm]	weight [kg/m]	standard length [m]
IV-CABLEISOL-19X22	19	22	0.12	40
IV-CABLEISOL-20X23	20	23	0.12	40
IV-CABLEISOL-22X24	22	24	0.10	40
IV-CABLEISOL-22X25	22	25	0.14	40
IV-CABLEISOL-25X27	25	27	0.11	40
IV-CABLEISOL-25X28	25	28	0.15	40
IV-CABLEISOL-28X31	28	31	0.17	40
IV-CABLEISOL-32X35	32	35	0.19	40
IV-CABLEISOL-40X43	40	43	0.24	40
IV-CABLEISOL-45X48	45	48	0.27	40



### COOLCABLE®

**Internal layer:** Black SBR/NR rubber  
**Reinforcement:** Textile braid  
**External layer:** Black SBR/NR rubber  
**Working temp.:** From -30°C up to +80°C

Thin-walled insulating hose designed to cool electric cables in automatic welding systems. Electrical resistance  $R > 10^8 \Omega/m$ .

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	theoretical bursting press. [bar]	weight [kg/m]	standard length [m]
IV-COOLCABLE-12	12	22	10	30	0.35	120
IV-COOLCABLE-14	14	21	10	30	0.25	120
IV-COOLCABLE-15	15	22	10	30	0.26	120
IV-COOLCABLE-18	18	28	10	30	0.47	120
IV-COOLCABLE-20	20	30	10	30	0.51	120
IV-COOLCABLE-25	25	33	10	30	0.45	120
IV-COOLCABLE-28	28	35	10	30	0.44	120
IV-COOLCABLE-30	30	40	10	30	0.72	120
IV-COOLCABLE-35	35	45	10	30	0.77	120
IV-COOLCABLE-38	38	47	10	30	0.72	120
IV-COOLCABLE-42	42	50	10	30	0.70	120
IV-COOLCABLE-48	48	60	10	30	1.30	120
IV-COOLCABLE-55	55	65	10	30	1.16	120

## MACHINES AND ACCESSORIES - protection and sealing

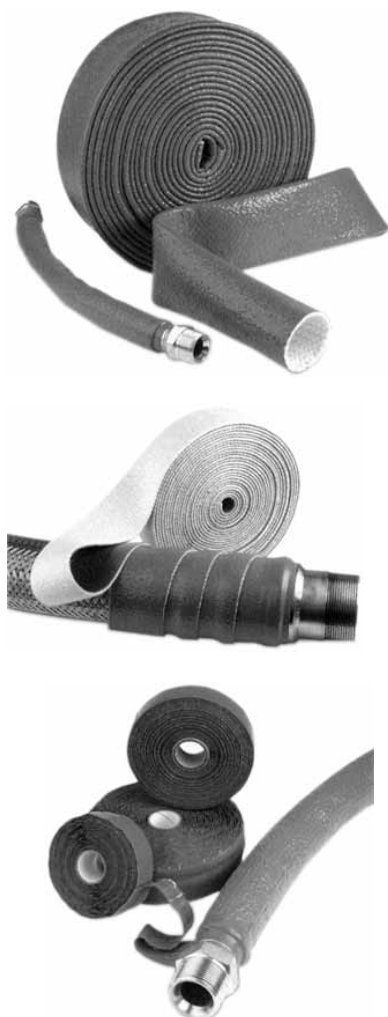


### GUARDIAN® ELECTRO

**Internal layer:** Black EPDM rubber  
**Reinforcement:** Textile braid  
**External layer:** Black EPDM rubber  
**Working temp.:** From -40°C up to +90°C  
 (with peaks up to +110°C)

Delivery hose designed to protect and cool electrical cables in steelmaking industry. The internal hose layer is resistant to hot cooling water, process water, corrosion inhibitors and water with anti-freezing additives. The internal and external layers are non-conductive. Electrical resistance  $R > 10^8 \Omega/m$ , break down voltage  $> 6 \text{ kV/mm}$ . The external layer is resistant to ageing, ozone and radiant heat from electric arc furnaces, self-extinguishing (compliant with ASTM C-542 standard). Bending radius is defined at 1 bar pressure.

code	I.D. [mm]	O.D. [mm]	working pressure [bar]	bursting pressure [bar]	bending radius [mm]	weight [kg/m]	standard length [m]
IV-GUARDIAN-019	19	30	10	30	70	0.51	120
IV-GUARDIAN-025	25	37	10	30	80	0.72	120
IV-GUARDIAN-030	30	42	10	30	80	0.83	120
IV-GUARDIAN-032	32	44	10	30	90	0.88	120
IV-GUARDIAN-035	35	48	10	30	100	1.06	120
IV-GUARDIAN-040	40	53	10	30	140	1.20	120
IV-GUARDIAN-042	42	55	10	30	150	1.24	120
IV-GUARDIAN-050	50	65	10	30	150	1.70	120
IV-GUARDIAN-055	55	70	10	30	170	1.85	120
IV-GUARDIAN-060	60	76	10	30	170	2.14	120
IV-GUARDIAN-063	63.5	79	10	30	180	2.18	120
IV-GUARDIAN-070	70	86	10	30	190	2.49	120
IV-GUARDIAN-080	80	96	10	30	220	2.67	120
IV-GUARDIAN-090	90	108	10	30	220	3.35	120
IV-GUARDIAN-100	100	118	10	30	300	3.69	120



## PYROJACKET PYROTAPE PYROSIL

**Material:** Glass fibre with silicone coating in iron oxide red colour

**Working temp.:** From -54°C up to +260°C  
Up to +1090°C for 15 ÷ 20 minutes  
Up to +1650°C for 15 ÷ 30 seconds

For thermal protection of hoses, cables and ropes. Resistant to abrasion, oils, fuels and the majority of industrial chemicals. Widely used in steel melting plants, steel mills, glass works and foundries - molten metal or glass splashes are shed by the coating immediately. Also used to insulate steam and hot oil installations - protection against burns and energy losses. The variation meant for aviation made according to SAE Aerospace Standard 1072D.

Both PYROTAPE and self-bonding PYROSIL tape are perfect for use as an end sealant of PYROJACKET shield at the ends of assemblies and for any object of irregular shape.

Also available as a protective sheet - PYROBLANKET.

### PYROJACKET

code	coating internal diameter [mm]	standard length [m]
FQ-PJ-008	8	30
FQ-PJ-010	10	30
FQ-PJ-013	13	30
FQ-PJ-016	16	30
FQ-PJ-019	19	30
FQ-PJ-022	22	30
FQ-PJ-025	25	30
FQ-PJ-029	29	30
FQ-PJ-032	32	30
FQ-PJ-035	35	30
FQ-PJ-038	38	30
FQ-PJ-041	41	30
FQ-PJ-044	44	30
FQ-PJ-051	51	30
FQ-PJ-057	57	30
FQ-PJ-064	64	30
FQ-PJ-070	70	30
FQ-PJ-076	76	30
FQ-PJ-083	83	30
FQ-PJ-089	89	30
FQ-PJ-095	95	30
FQ-PJ-102	102	30
FQ-PJ-114	114	30
FQ-PJ-127	127	30

### PYROTAPE

code	band width [mm]	roll length [m]
FQ-PT-025	25	15 or 30
FQ-PT-050	50	15 or 30
FQ-PT-075	76	15 or 30
FQ-PT-100	102	15 or 30
FQ-PT-125	127	15 or 30

### PYROSIL

code	band width [mm]	tape thickness [mm]	roll length [m]
FQ-PST-25X05	25	0.5	11
FQ-PST-38X15	38	1.5	11

## MACHINES AND ACCESSORIES - protection and sealing



### PYROBLANKET

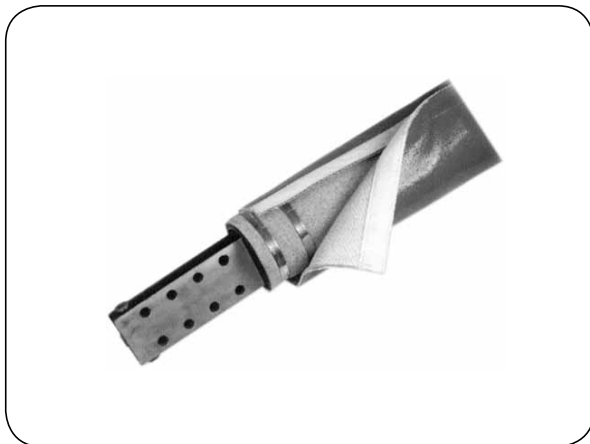
**Material:** Glass fibre with silicone coating in iron oxide red colour  
**Working temp.:** From -54°C up to +260°C  
Up to +1090°C for 15 ÷ 20 minutes  
Up to +1650°C for 15 ÷ 30 seconds

Thermal protective shield in a sheet version. Resistant to abrasion, oils, fuels and the majority of industrial chemicals. Widely used in steel melting plants, steel mills, glass works and foundries - molten metal or glass splashes are shed by the coating immediately.

Available in two variations:

PYROBLANKET 32 - glass fabric coated both sides with iron-oxide silicone compound, with 1085 g/m<sup>2</sup> basis weight. Primarily used as weld splatter protection as well as for lighter application in foundries. Available in roll widths of 915 and 1525 mm;

PYROBLANKET 96 - thick glass fabric coated one side with thick layer of iron-oxide silicone compound, with 3260 g/m<sup>2</sup> basis weight. Primarily used to make protective covers in foundries - the external compound layer sheds molten metal almost immediately. Available in roll width of 1016 mm.



### EAF CABLE COVER

**Material:** Glass fibre with silicone coating in iron oxide red colour  
**Working temp.:** From -54°C up to +260°C  
Up to +1090°C for 15 ÷ 20 minutes  
Up to +1650°C for 15 ÷ 30 seconds

Designed for thermal protection of water-cooled power cables feeding electric arc furnaces in steel plants. Made of PYROBLANKET 96 fabric equipped with a Nomex® hook and loop closure system to enable installation without disconnecting the cables. Resistant to heat radiation, abrasion, impact, flame and molten metal splash occurring during furnace charging operations. The cover is both non-conductive and not influenced by furnace magnetic induction. Available in a full diameter range up to 12" (305 mm).



### PYROSEALANT

**Material:** Amorphous silica, polydimethylsiloxane, iron oxide and curing catalyst compound  
**Working temp.:** Up to +287°C  
(with peaks up to +538°C)

High temperature resistant, semi-liquid sealing compound that cures to a tack-free state in 10÷15 minutes, and completely within approximately 18 hours. Supplied in 310 ml tubes.



## THERMOSLEEVE B

**Material:** Fibre glass

**Working temp.:** Up to +538°C (with peaks up to +705°C)

Thermal, heavy wall protective sleeve made of glass fibre. Features excellent thermal and electrical insulation properties. THERMOSLEEVE B can be used as the only protection of hoses and cables or it can be covered with some extra shield such as PYROJACKET or SILICAFLEX in order to increase the degree of insulation. It is available in two wall thickness options: 1/8" (3.2 mm) and 1/16" (1.6 mm).

### THERMOSLEEVE B

code	coating I.D. [mm]	thickness [mm]	length [m]
FQ-TSB-08	13	3.2	100
FQ-TSB-12	19	3.2	90
FQ-TSB-14	22	3.2	90
FQ-TSB-16	25	3.2	88
FQ-TSB-20	32	3.2	85
FQ-TSB-24	38	3.2	68
FQ-TSB-32	51	3.2	57
FQ-TSB-40	64	3.2	54
FQ-TSB-48	76	3.2	51
FQ-TSB-64	102	3.2	42

### THERMOSLEEVE BL

code	coating I.D. [mm]	thickness [mm]	length [m]
FQ-TSBL-08	13	1.6	100
FQ-TSBL-12	19	1.6	90
FQ-TSBL-14	22	1.6	90
FQ-TSBL-16	25	1.6	88
FQ-TSBL-20	32	1.6	85
FQ-TSBL-24	38	1.6	68
FQ-TSBL-32	51	1.6	57
FQ-TSBL-40	64	1.6	54
FQ-TSBL-48	76	1.6	51
FQ-TSBL-64	102	1.6	42



## THERMOSLEEVE S

**Material:** Fibre glass

**Working temp.:** Up to +538°C (with peaks up to +705°C)

Thermal protective sleeve made of glass fibre braid, heat cleaned and saturated with special acrylic substance. It is smooth with no loose fibres falling out. It fits well and is relatively highly resistant to abrasion. The construction of the braid enables expansion and contraction by 25% so it adjusts to the diameter required.

code	coating I.D. [mm]	diameter range [mm]	code	coating I.D. [mm]	diameter range [mm]
FQ-TSS-10	16	16 ÷ 22	FQ-TSS-22	35	35 ÷ 57
FQ-TSS-14	22	23 ÷ 32	FQ-TSS-44	70	58 ÷ 102



## MACHINES AND ACCESSORIES - protection and sealing



### SILICAFLEX BLANKET

code	band width [mm]	band thickness [mm]	length [m]
FQ-SFB18-36	915	0.76	up to 45
FQ-SFB32-36	915	1.27	up to 45

### SILICAFLEX TAPE AB

code	band width [mm]	standard length [m]
FQ-STAB-02	51	45
FQ-STAB-04	102	45



## SILICAFLEX

**Material:** Silica fibre (silicon dioxide)  
**Working temp.:** +982°C (with peaks up to +1650°C)

Thermal protective shield available as a sheet, sleeve or tape. Very strong and resistant to chemicals (except for hydrofluoric acid, phosphoric acid and strong bases). Completely resistant to flames. High content of pure silica (over 96%) guarantees excellent heat resistance, flexibility and minimum shrinkage. Electric insulation is its further property.

SILICAFLEX BLANKET available in thickness of: 0.76 mm and 1.27 mm and standard width of 915 mm. SILICAFLEX SLEEVE available in a diameter range from 3/8" (10 mm) to 7" (178 mm).

SILICAFLEX TAPE AB coated one side with pressure sensitive backing that cures when the tape is stretched. Available in two standard widths of: 51 mm and 102 mm.

### SILICAFLEX SLEEVE

code	coating internal diameter [mm]	standard length [m]
FQ-SFHD-06	10	15
FQ-SFHD-08	13	15
FQ-SFHD-12	19	15
FQ-SFHD-16	25	15
FQ-SFHD-24	38	15
FQ-SFHD-32	51	15
FQ-SFHD-48	76	15
FQ-SFHD-64	102	15
FQ-SFHD-80	127	15
FQ-SFHD-96	152	15
FQ-SFHD-116	178	15

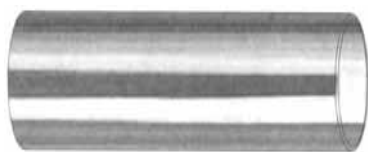
## PYREFLECT SLEEVE

**Material:** Aramid fibre, aluminium film  
**Working temp.:** +343°C (with peaks up to +538°C, laboratory tested up to +1650°C (1 min.))

Thermal reflective sleeve. Reflects more than 90% of radiant heat energy. Commonly used to stop occasional infrared radiation. Resistant to molten metal splashes, abrasion, water and oil. Good resistance to flame. Available with snap fasteners or Velcro® fasteners attached lengthwise (attached without disconnection of hoses or cables). It is also available as a sheet (PYREFLECT BLANKET).

code	coating internal diameter [mm]	code	coating internal diameter [mm]
FQ-PRF-08	13	FQ-PRF-32	51
FQ-PRF-12	19	FQ-PRF-40	64
FQ-PRF-16	25	FQ-PRF-48	76
FQ-PRF-20	32	FQ-PRF-56	89
FQ-PRF-24	38	FQ-PRF-64	102
FQ-PRF-28	44		

## MACHINES AND ACCESSORIES - protection and sealing



### FEP heat shrinkable sleeve

**Material:** Fluorinated ethylene propylene  
**Max. working temp.:** +204°C  
**Shrink temp.:** From +121°C up to +204°C (shrinkage range 20÷25%)  
**Hardness:** 53° Shore (A)  
**Density:** 2.15 g/cm<sup>3</sup>

FEP shrinkable sleeve, highly resistant to kinking and cracking, for application in numerous branches of industry. Long service life can be counted in years, even when it operates under high pressure. Smooth surface prevents dirt sticking. Excellent thermal resistance. Widely used in industry (e.g. as a sleeve for rollers in paper production or in printing houses). Certified by FDA.

code	I.D. [mm]	length [cm]	shrinkage range [mm]	code	I.D. [mm]	length [cm]	shrinkage range [mm]
VE-HFE6-10020-01	28	30.5	22 ÷ 26	VE-HFE6-25020-01	71.5	30.5	54 ÷ 67
VE-HFE6-10020-02		61		VE-HFE6-25020-02		61	
VE-HFE6-10020-03		91		VE-HFE6-25020-03		91	
VE-HFE6-10020-04		122		VE-HFE6-25020-04		122	
VE-HFE6-10020-05		152		VE-HFE6-25020-05		152	
VE-HFE6-10020-06		183		VE-HFE6-25020-06		183	
VE-HFE6-10020-07		213		VE-HFE6-25020-07		213	
VE-HFE6-10020-08		244		VE-HFE6-25020-08		244	
VE-HFE6-10020-09		274		VE-HFE6-25020-09		274	
VE-HFE6-10020-10		305		VE-HFE6-25020-10		305	
VE-HFE6-12520-01	35	30.5	27 ÷ 32	VE-HFE6-30020-01	80	30.5	68 ÷ 74
VE-HFE6-12520-02		61		VE-HFE6-30020-02		61	
VE-HFE6-12520-03		91		VE-HFE6-30020-03		91	
VE-HFE6-12520-04		122		VE-HFE6-30020-04		122	
VE-HFE6-12520-05		152		VE-HFE6-30020-05		152	
VE-HFE6-12520-06		183		VE-HFE6-30020-06		183	
VE-HFE6-12520-07		213		VE-HFE6-30020-07		213	
VE-HFE6-12520-08		244		VE-HFE6-30020-08		244	
VE-HFE6-12520-09		274		VE-HFE6-30020-09		274	
VE-HFE6-12520-10		305		VE-HFE6-30020-10		305	
VE-HFE6-15020-01	47	30.5	33 ÷ 43	VE-HFE6-35020-01	99.5	30.5	75 ÷ 92
VE-HFE6-15020-02		61		VE-HFE6-35020-02		61	
VE-HFE6-15020-03		91		VE-HFE6-35020-03		91	
VE-HFE6-15020-04		122		VE-HFE6-35020-04		122	
VE-HFE6-15020-05		152		VE-HFE6-35020-05		152	
VE-HFE6-15020-06		183		VE-HFE6-35020-06		183	
VE-HFE6-15020-07		213		VE-HFE6-35020-07		213	
VE-HFE6-15020-08		244		VE-HFE6-35020-08		244	
VE-HFE6-15020-09		274		VE-HFE6-35020-09		274	
VE-HFE6-15020-10		305		VE-HFE6-35020-10		305	
VE-HFE6-20020-01	57	30.5	44 ÷ 53	VE-HFE6-40020-01	117	30.5	93 ÷ 108
VE-HFE6-20020-02		61		VE-HFE6-40020-02		61	
VE-HFE6-20020-03		91		VE-HFE6-40020-03		91	
VE-HFE6-20020-04		122		VE-HFE6-40020-04		122	
VE-HFE6-20020-05		152		VE-HFE6-40020-05		152	
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VE-HFE6-20020-07		213		VE-HFE6-40020-07		213	
VE-HFE6-20020-08		244		VE-HFE6-40020-08		244	
VE-HFE6-20020-09		274		VE-HFE6-40020-09		274	
VE-HFE6-20020-10		305		VE-HFE6-40020-10		305	

# MACHINES AND ACCESSORIES - protection and sealing

## FEP heat shrinkable sleeve

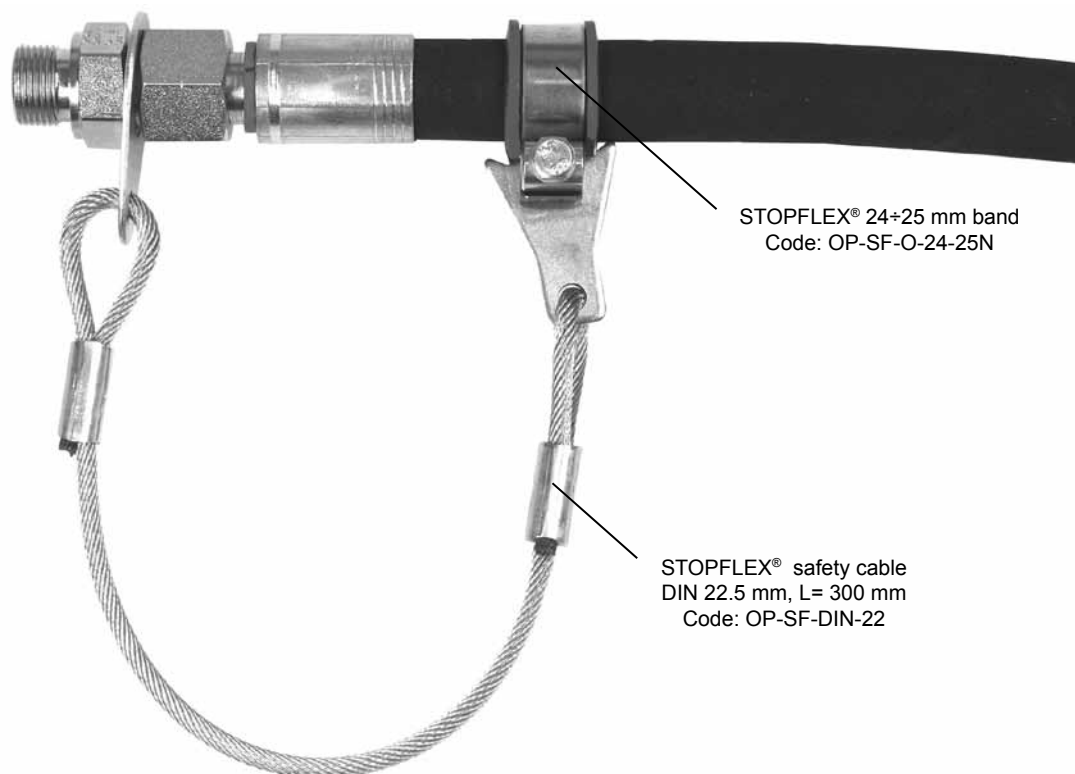
Table continuation:

code	I.D. [mm]	length [cm]	shrinkage range [mm]	code	I.D. [mm]	length [cm]	shrinkage range [mm]
VE-HFE6-50020-01	140.5	30.5	109 ÷ 130	VE-HFE6-10520-01	285.5	30.5	242 ÷ 266
VE-HFE6-50020-02		61		VE-HFE6-10520-02		61	
VE-HFE6-50020-03		91		VE-HFE6-10520-03		91	
VE-HFE6-50020-04		122		VE-HFE6-10520-04		122	
VE-HFE6-50020-05		152		VE-HFE6-10520-05		152	
VE-HFE6-50020-06		183		VE-HFE6-10520-06		183	
VE-HFE6-50020-07		213		VE-HFE6-10520-07		213	
VE-HFE6-50020-08		244		VE-HFE6-10520-08		244	
VE-HFE6-50020-09		274		VE-HFE6-10520-09		274	
VE-HFE6-50020-10		305		VE-HFE6-10520-10		305	
VE-HFE6-60020-01	162	30.5	131 ÷ 150	VE-HFE6-12025-01	324.5	30.5	267 ÷ 302
VE-HFE6-60020-02		61		VE-HFE6-12025-02		61	
VE-HFE6-60020-03		91		VE-HFE6-12025-03		91	
VE-HFE6-60020-04		122		VE-HFE6-12025-04		122	
VE-HFE6-60020-05		152		VE-HFE6-12025-05		152	
VE-HFE6-60020-06		183		VE-HFE6-12025-06		183	
VE-HFE6-60020-07		213		VE-HFE6-12025-07		213	
VE-HFE6-60020-08		244		VE-HFE6-12025-08		244	
VE-HFE6-60020-09		274		VE-HFE6-12025-09		274	
VE-HFE6-60020-10		305		VE-HFE6-12025-10		305	
VE-HFE6-70020-01	189.5	30.5	151 ÷ 176	VE-HFE6-13025-01	368.5	30.5	303 ÷ 343
VE-HFE6-70020-02		61		VE-HFE6-13025-02		61	
VE-HFE6-70020-03		91		VE-HFE6-13025-03		91	
VE-HFE6-70020-04		122		VE-HFE6-13025-04		122	
VE-HFE6-70020-05		152		VE-HFE6-13025-05		152	
VE-HFE6-70020-06		183		VE-HFE6-13025-06		183	
VE-HFE6-70020-07		213		VE-HFE6-13025-07		213	
VE-HFE6-70020-08		244		VE-HFE6-13025-08		244	
VE-HFE6-70020-09		274		VE-HFE6-13025-09		274	
VE-HFE6-70020-10		305		VE-HFE6-13025-10		305	
VE-HFE6-80020-01	218	30.5	177 ÷ 203	VE-HFE6-14025-01	447.5	30.5	344 ÷ 416
VE-HFE6-80020-02		61		VE-HFE6-14025-02		61	
VE-HFE6-80020-03		91		VE-HFE6-14025-03		91	
VE-HFE6-80020-04		122		VE-HFE6-14025-04		122	
VE-HFE6-80020-05		152		VE-HFE6-14025-05		152	
VE-HFE6-80020-06		183		VE-HFE6-14025-06		183	
VE-HFE6-80020-07		213		VE-HFE6-14025-07		213	
VE-HFE6-80020-08		244		VE-HFE6-14025-08		244	
VE-HFE6-80020-09		274		VE-HFE6-14025-09		274	
VE-HFE6-80020-10		305		VE-HFE6-14025-10		305	
VE-HFE6-90020-01	259	30.5	204 ÷ 241	VE-HFE6-16525-01	500.5	30.5	417 ÷ 466
VE-HFE6-90020-02		61		VE-HFE6-16525-02		61	
VE-HFE6-90020-03		91		VE-HFE6-16525-03		91	
VE-HFE6-90020-04		122		VE-HFE6-16525-04		122	
VE-HFE6-90020-05		152		VE-HFE6-16525-05		152	
VE-HFE6-90020-06		183		VE-HFE6-16525-06		183	
VE-HFE6-90020-07		213		VE-HFE6-16525-07		213	
VE-HFE6-90020-08		244		VE-HFE6-16525-08		244	
VE-HFE6-90020-09		274		VE-HFE6-16525-09		274	
VE-HFE6-90020-10		305		VE-HFE6-16525-10		305	

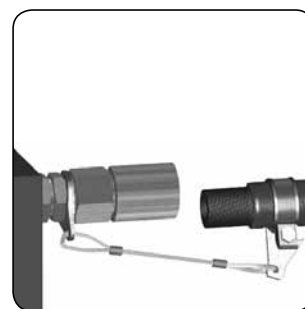
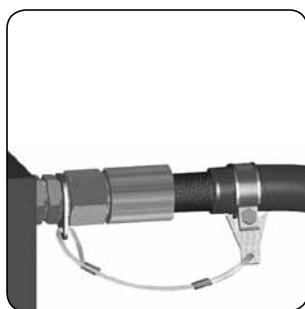
### STOPFLEX® safety system

STOPFLEX® safety system protects hose assembly operators against injury, and machinery against damage when the hose is accidentally separated from its fitting. The disconnected hose is held by the cable. A band, equipped with a rubber gasket, remains perfectly secured, simultaneously allowing the hose to swell according to the working pressure. The system is designed for hydraulic assemblies with several types of fittings (metric, imperial, flanged, etc.).

An exemplary STOPFLEX® safety system attached to hydraulic hose with O.D. = 24.6 mm is shown below. The assembly also includes DKOS fitting with M24x1.5 female thread screwed to the connector.

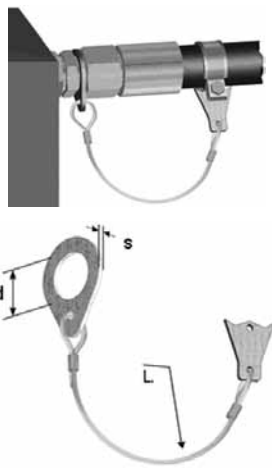
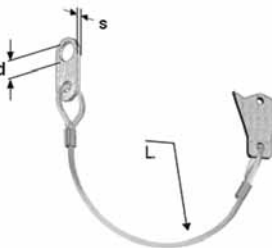
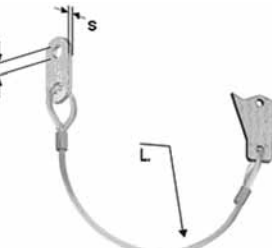


In case of hose disconnection from its fitting, STOPFLEX® safety system holds the hose closely to its original place of connection, thus the “whip effect” can be avoided. The system has been tested using hose under maximum working pressure, described in accordance with standards: EN 853, EN 854, EN 855, EN 856, SAE J517. Proper and safe performance of STOPFLEX® safety system is guaranteed only under condition that the working pressure given in standards above is not exceeded.



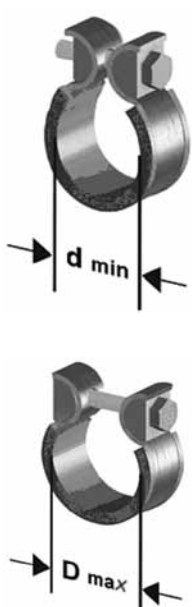
# MACHINES AND ACCESSORIES - protection and sealing

## STOPFLEX® safety system

picture	code	yoke I.D. d [mm]	yoke thickness s [mm]	cable length L [mm]	max. pressure use [bar]	usage
	OP-SF-DIN-14	14.5	2	300	450	8L - 1/4"
	OP-SF-DIN-17	17			445	8S - 10L - 3/8"
	OP-SF-DIN-18	18.5			420	10S - 12L
	OP-SF-DIN-20	20.5				12S
	OP-SF-DIN-22	22.5				14S - 15L - 1/2"
	OP-SF-DIN-24	24.5				16S - 5/8"
	OP-SF-DIN-26	26.5				18L - 3/4"
	OP-SF-DIN-30	30.5	20S - 22L			
	OP-SF-DIN-34	34	2.5	450		1"
	OP-SF-DIN-36	36.5				25S - 28l
	OP-SF-DIN-42	42.5				30S - 1.1/4"
	OP-SF-DIN-45	45.5				35L
	OP-SF-DIN-49	49				1.1/2"
	OP-SF-DIN-52	52.5			385	38S - 42L
	OP-SF-DIN-60	60			350	2"
	OP-SF-SAE-08	8.5			4	300
	OP-SF-SAE-10-300	10.5	300	420		SAE 3/4 3000 PSI
	OP-SF-SAE-10	10.5	450			SAE 1-1.1/4 3000 PSI. SAE 3/4 6000 PSI
	OP-SF-SAE-12	12.5				SAE 1.1/2-2 3000 PSI. SAE 1 6000 PSI
	OP-SF-SAE-14	14.5				SAE 1.1/4 6000 PSI
	OP-SF-SAE-16	16.5				SAE 1.1/2 6000 PSI
	OP-SF-SAE-20	20.5	8	550		350
	OP-SF-SAE-25	25			-	
	OP-SF-SAE-32	32			210	-
	OP-SF-V	13	4	450	420	general purpose


# MACHINES AND ACCESSORIES - protection and sealing

## STOPFLEX safety system

picture	code	d min. [mm]	D max. [mm]	code	d min [mm]	D max [mm]
	OP-SFO-11-11,5N	11	11.5	OP-SFO-42-43N	42	43
	OP-SFO-12-12,5N	12	12.5	OP-SFO-43-44N	43	44
	OP-SFO-13-13,5N	13	13.5	OP-SFO-44-45N	44	45
	OP-SFO-14-15N	14	15	OP-SFO-45-47N	45	47
	OP-SFO-16-17N	16	17	OP-SFO-48-50N	48	50
	OP-SFO-17-18N	17	18	OP-SFO-51-53N	51	53
	OP-SFO-18-19N	18	19	OP-SFO-53-54N	53	54
	OP-SFO-20-21N	20	21	OP-SFO-54-56N	54	56
	OP-SFO-21-22N	21	22	OP-SFO-57-59N	57	59
	OP-SFO-22-23N	22	23	OP-SFO-60-62N	60	62
	OP-SFO-24-25N	24	25	OP-SFO-63-65N	63	65
	OP-SFO-25-26N	25	26	OP-SFO-66-68N	66	68
	OP-SFO-26-27N	26	27	OP-SFO-69-71N	69	71
	OP-SFO-27-28N	27	28	OP-SFO-72-74N	72	74
	OP-SFO-28-29N	28	29	OP-SFO-75-77N	75	77
	OP-SFO-30-31N	30	31	OP-SFO-78-80N	78	80
	OP-SFO-32-33N	32	33	OP-SFO-81-83N	81	83
	OP-SFO-34-35N	34	35	OP-SFO-84-86N	84	86
	OP-SFO-36-37N	36	37	OP-SFO-87-89N	87	89
	OP-SFO-38-39N	38	39	OP-SFO-90-92N	90	92
	OP-SFO-39-40N	39	40	OP-SFO-93-95N	93	95
	OP-SFO-40-41N	40	41			

## WHIPCHECK safety system

A safety cable protecting against the effects of accidental hose disconnection. Made of galvanized steel. AC and BC variations are equipped with copper sleeves - for coal mining applications.

picture	code	minimum hose diameter [mm]	maximum hose diameter [mm]	strength [kG]
	AC-WHIPCHECK-A	13	32	588
	AC-WHIPCHECK-B	38	75	2350
	AC-WHIPCHECK-AC	13	32	588
	AC-WHIPCHECK-BC	38	75	2350

# MACHINES AND ACCESSORIES - protection and sealing

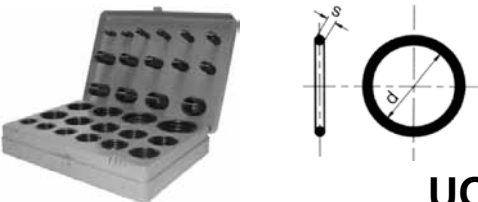
## Seals

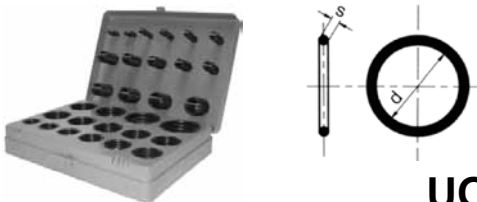
Seals designed for threaded connections. Made of NBR rubber as a standard. Seals made of much materials as Viton, EPDM, PTFE, copper are also available. There is also a special, metal-rubber type of seals intended for high pressure connections. It is made of zinc-plated steel + NBR or stainless steel + Viton. A set of o-rings in the most popular sizes is a perfect choice for maintenance or service operations. The special, profiled seals according to DIN 3869 for high pressure connectors according to DIN 3852-11 type E are also available.

### O-rings for special application

General purpose O-rings available in a size range from 3.3 up to 220 mm internal diameter. Code example of an O-ring, size 13.3 mm - internal diameter „d” and 2.4 mm - thickness „s”, made of NBR material, 70 Shore hardness: TI-UO-013.3X2.4-N70. The O-rings in other sizes and of other materials are available on request.

### O-ring sets

O-rings set - imperial (NBR70)			
			
<b>UOB</b>			
code	dimensions [mm]		number [pc]
	d	s	
TI-UOB-KIT	2.90	1.78	20
	3.68	1.78	20
	4.47	1.78	20
	5.28	1.78	20
	6.07	1.78	20
	7.65	1.78	20
	9.19	2.62	13
	9.25	1.78	20
	10.77	2.62	13
	12.37	2.62	13
	13.94	2.62	13
	15.54	2.62	13
	17.12	2.62	13
	18.64	3.53	10
	18.72	2.62	13
	20.22	3.53	10
	21.82	3.53	10
	23.39	3.53	10
	24.99	3.53	10
	26.57	3.53	10
	28.17	3.53	10
	29.74	3.53	10
	31.34	3.53	10
	32.92	3.53	10
	34.52	3.53	10
	36.09	3.53	10
	37.47	5.33	7
	37.69	3.53	10
	40.64	5.33	7
	43.82	5.33	7

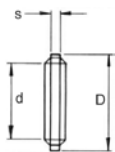
O-rings set - metric (NBR70)			
			
<b>UOM</b>			
code	dimensions [mm]		number [pc]
	d	s	
TI-UOM-KIT	3	2	16
	4	2	16
	5	2	16
	6	2	16
	7	2	16
	8	2	16
	10	2	16
	10	2.5	13
	11	2.5	13
	12	2.5	13
	14	2.5	13
	16	2.5	13
	17	2.5	13
	19	2.5	13
	19	3	11
	20	3	12
	22	3	12
	24	3	12
	25	3	12
	27	3	12
	28	3	12
	30	3	12
	32	3	12
	33	3	12
	35	3	12
	36	3	12
	38	3	12
	38	4	9
	41	4	9
	44	4	9

# MACHINES AND ACCESSORIES - protection and sealing

## Seals

### Metal-rubber seals

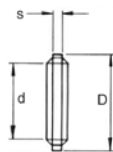
DOWTY seal - imperial (galv. steel, NBR70)



**UDB**

code	size [inch]	dimensions [mm]			burst. press. [bar]
		d	D	s	
TI-UDB-02	1/8	10.37	15.88	2	1500
TI-UDB-04	1/4	13.74	20.57	2	1550
TI-UDB-06	3/8	17.28	23.80	2	1260
TI-UDB-08	1/2	21.54	28.58	2.5	1150
TI-UDB-10	5/8	23.49	31.75	2.5	1250
TI-UDB-12	3/4	27.05	34.93	2.5	1060
TI-UDB-16	1	33.89	42.80	3.2	810
TI-UDB-20	1.1/4	42.93	52.38	3.2	690
TI-UDB-24	1.1/2	48.44	58.60	3.2	690
TI-UDB-32	2	60.58	73.03	3.2	700

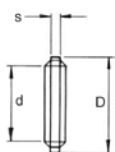
DOWTY seal - metric (galv. steel, NBR70)



**UDM**

code	size [mm]	dimensions [mm]			burst. press. [bar]
		d	D	s	
TI-UDM-08	8	8.7	13	1	1330
TI-UDM-10	10	10.7	16	1.5	1350
TI-UDM-12	12	12.7	18	1.5	1250
TI-UDM-14	14	14.7	22	1.5	1510
TI-UDM-16	16	16.7	24	1.5	1400
TI-UDM-18	18	18.7	26	1.5	1275
TI-UDM-20	20	20.7	28	1.5	1150
TI-UDM-22	22	22.7	30	2	1100
TI-UDM-24	24	24.7	32	2	1050
TI-UDM-26	26	26.7	35	2	1050
TI-UDM-30	30	31.0	39	2	860
TI-UDM-33	33	33.7	42	2	900
TI-UDM-36	36	36.7	46	2	880
TI-UDM-42	42	42.7	53	3	940

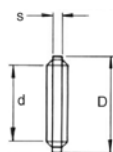
DOWTY seal - imperial (AISI 316L, Viton 75)



**UDB-SS**

code	size [inch]	dimensions [mm]			burst. press. [bar]
		d	D	s	
TI-UDB-02-SS	1/8	10.37	15.88	2	1480
TI-UDB-04-SS	1/4	13.74	20.57	2	1540
TI-UDB-06-SS	3/8	17.28	23.80	2	1230
TI-UDB-08-SS	1/2	21.54	28.58	2	1120
TI-UDB-10-SS	5/8	23.49	31.75	2.5	1240
TI-UDB-12-SS	3/4	27.05	34.93	2	1050
TI-UDB-16-SS	1	33.89	42.80	2.5	780
TI-UDB-20-SS	1.1/4	42.93	52.38	2.5	690
TI-UDB-24-SS	1.1/2	48.44	58.60	2.5	690
TI-UDB-32-SS	2	60.58	73.03	2.5	720

DOWTY seal - metric (AISI 316L, Viton 75)



**UDM-SS**

code	size [mm]	dimensions [mm]			burst. press. [bar]
		d	D	s	
TI-UDM-12-SS	12	12.7	18	1.5	1680
TI-UDM-14-SS	14	14.7	22	1.5	1510
TI-UDM-16-SS	16	16.7	24	1.5	1370
TI-UDM-18-SS	18	18.7	26	1.5	1260
TI-UDM-22-SS	22	22.7	30	2	1080

### Profiled seals according to DIN 3869

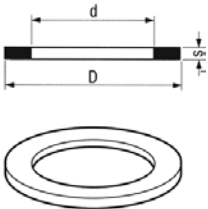
code (NBR85)	code (Viton80)	metric thread	inch thread	dimensions [mm]			DIN 3852-11E
				d	D	s	
TI-UE-08	TI-UE-08-V	8x1	-	6.5	9.9	1	
TI-UE-10	TI-UE-10-V	10x1	1/8 BSP	8.4	11.9	1	
TI-UE-12	TI-UE-12-V	12x1.5	-	9.8	14.4	1.5	
TI-UE-14	TI-UE-14-V	14x1.5	1/4 BSP	11.6	16.5	1.5	
TI-UE-16	TI-UE-16-V	16x1.5	-	13.8	18.9	1.5	
TI-UE-17	TI-UE-17-V	-	3/8 BSP	14.7	18.9	1.5	
TI-UE-18	TI-UE-18-V	18x1.5	-	15.7	20.9	1.5	
TI-UE-20	TI-UE-20-V	20x1.5	-	17.8	22.9	1.5	
TI-UE-21	TI-UE-21-V	-	1/2 BSP	18.5	23.9	1.5	
TI-UE-22	TI-UE-22-V	22x1.5	-	19.6	24.3	1.5	
TI-UE-26	TI-UE-26-V	26x1.5 / 27x2	3/4 BSP	23.9	29.2	1.5	
TI-UE-33	TI-UE-33-V	33x2	1 BSP	29.7	35.7	2	
TI-UE-42	TI-UE-42-V	42x2	1.1/4 BSP	38.8	45.8	2	
TI-UE-48	TI-UE-48-V	48x2	1.1/2 BSP	44.7	50.7	2	

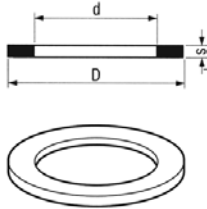


# MACHINES AND ACCESSORIES - protection and sealing

## Seals

### Flat seals

Copper seal					
					
<b>UM</b>					
code	size		dimensions [mm]		
	[mm]	[inch]	d	D	s
TI-UM-06-10	6		6	10	1.5
TI-UM-08-12	8		8	12	1.5
TI-UM-08-14	8		8	14	1.5
TI-UM-10-14	10	1/8	10	14	1.5
TI-UM-10-16	10	1/8	10	16	1.5
TI-UM-12-15	12		12	15	1.5
TI-UM-12-18	12		12	18	1.5
TI-UM-13-19	13	1/4	13	19	1.5
TI-UM-14-20	14		14	20	1.5
TI-UM-16-22	16		16	22	1.5
TI-UM-17-21	17	3/8	17	21	1.5
TI-UM-18-24	18		18	24	1.5
TI-UM-20-26	20		20	26	1.5
TI-UM-21-26	21	1/2	21	26	1.5
TI-UM-22-27	22		22	27	1.5
TI-UM-24-30	24	5/8	24	30	1.5
TI-UM-26-33	26		26	33	1.5
TI-UM-27-33	27	3/4	27	33	1.5
TI-UM-30-36	30		30	36	1.5
TI-UM-33-40	33	1	33	40	1.5
TI-UM-42-49	42	1.1/4	42	49	1.5
TI-UM-48-59	48	1.1/2	48	59	1.5

PTFE seal					
					
<b>UBW140</b>					
code	size [inch]	dimensions [mm]			
		d	D	s	
TI-UBW140-04-T	1/4	6	11.3	2	
TI-UBW140-06-T	3/8	7	15	2	
TI-UBW140-08-T	1/2	10	19	2	
TI-UBW140-12-T	3/4	12	24	2	
TI-UBW140-16-T	1	20	30	2	
TI-UBW140-20-T	1.1/4	28	38	2	
TI-UBW140-24-T	1.1/2	34	44.5	2	
TI-UBW140-32-T	2	42.5	56.2	3	
TI-UBW140-40-T	2.1/2	55.5	72	3	

### Tool set for O-ring




**EC-100740**

# MACHINES AND ACCESSORIES - protection and sealing

## Seals

### GD flat seal

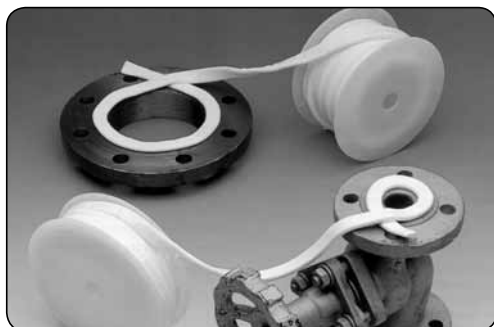
GD flat seal is designed to seal the connection between a male parallel thread (e.g. BSP male thread) and a female parallel thread (e.g. BSP female thread). The seal must be placed in the seat of the female thread in a way which prevents an undesired non-centric position. It should adhere to the flat surface of the seat in the female thread and also to the stub with the male thread. Working pressure 25 bar.

picture	code	dimensions [mm]	size [inch]	DN [mm]	material	weight [kg]
	GD-013-NP	20x13x2	1/2" BSP	13	Novapress*	0.001
	GD-013-PTFE				PTFE	0.001
	GD-013-PU				polyurethane	0.001
	GD-013-VI				Viton	0.001
	GD-020-NP	26x19x2	3/4" BSP	20	Novapress*	0.001
	GD-020-PTFE				PTFE	0.001
	GD-020-PU				polyurethane	0.001
	GD-020-VI				Viton	0.001
	GD-025-NP	33x24x2	1" BSP	25	Novapress*	0.002
	GD-025-PTFE				PTFE	0.002
	GD-025-PU				polyurethane	0.001
	GD-025-VI				Viton	0.002
	GD-032-NP	42x33x2	1.1/4" BSP	32	Novapress*	0.002
	GD-032-PTFE				PTFE	0.003
	GD-032-PU				polyurethane	0.002
	GD-032-VI				Viton	0.002
	GD-038-NP	48x39x2	1.1/2" BSP	38	Novapress*	0.003
	GD-038-PTFE				PTFE	0.003
	GD-038-PU				polyurethane	0.002
	GD-038-VI				Viton	0.003
	GD-050-EP	60x49x2	2" BSP	50	EPDM	0.004
	GD-050-NP				Novapress*	0.004
	GD-050-PTFE				PTFE	0.004
	GD-050-PU				polyurethane	0.003
	GD-050-VI	78x63x2.5	2.1/2" BSP	65	Viton	0.004
	GD-065-PTFE				PTFE	0.007
	GD-065-PU				polyurethane	0.005
	GD-065-VI				Viton	0.006
	GD-080-EP	88x77x3	3" BSP	80	EPDM	0.006
	GD-080-PTFE				PTFE	0.006
	GD-080-PU				polyurethane	0.006
	GD-080-VI				Viton	0.008
	GD-100-EP	114x100x3	4" BSP	100	EPDM	0.009
	GD-100-PTFE				PTFE	0.009
	GD-100-PU				polyurethane	0.009
	GD-100-VI				Viton	0.014

\* - Novapress® MULTI II is a seal made of aramid fibres and carbon fibres, fillers and NBR rubber, mainly intended for steam and hot water.

# MACHINES AND ACCESSORIES - protection and sealing

## Sealants



code	width x thickness [mm]	compression 100 kG/mm <sup>2</sup> [mm]	description
UG-FLANGIFLON-03X1.5	3 x 1.5	3.5 x 0.5	FLANGIFLON PTFE expanded tape designed to seal flat surfaces (e.g. flange connections). Pressure: to 250 bar (depends on the temperature). Working temp.: from -240°C up to +260°C. Medium: pH 0÷14.
UG-FLANGIFLON-05X2	5 x 2	6 x 0.7	
UG-FLANGIFLON-07X2.5	7 x 2.5	8 x 1.1	
UG-FLANGIFLON-10X3	10 x 3	11.5 x 1.3	
UG-FLANGIFLON-12X4	12 x 4	13.2 x 1.4	
UG-FLANGIFLON-14X5	14 x 5	15 x 1.5	
UG-FLANGIFLON-17X6	17 x 6	19.5 x 2	
UG-FLANGIFLON-20X7	20 x 7	23 x 2.6	



code	width x thickness [mm]	standard length [m]	description
UG-TAPE-12	12 x 0.076	12	PTFE tape designed to seal thread connections. Working temp.: from -200°C up to +260°C.



code	single coil efficiency (number of fittings)	description
LT-55	1/2" - 385 3/4" - 260 1" - 180	PTFE coated string sealant for pipe connection sealing. For direct application from the container with built-in cutting blade ensuring fast and clean assembly.



code	volume [ml]	description
LT-542-50	50	Anaerobic sealant for threaded connections up to 2" exposed to vibration in particular. Certified for use with natural gases. Not recommended for use with oxygen. Break loose torque: 15 ÷ 35 Nm. Working temp.: from -55°C up to +150°C.



code	volume [ml]	description
LT-577-50	50	Anaerobic sealant for threaded elements up to 3". Certified for use with natural gases. Not recommended for use with oxygen. Break loose torque: 9 ÷ 25 Nm Working temp.: -55°C up to +150°C.

## MACHINES AND ACCESSORIES - protection and sealing

### Sealants



code	volume [ml]	description
WE-AN30-542-P-020	20	Anaerobic sealant for threaded elements. Used in hydraulic and pneumatic systems. Medium viscosity and durability. Disassembly possible, maximum clearance of 0.15 mm. Working temp.: from -60°C up to +150°C. P - type pen container.
WE-AN30-542-P-050	50	



code	volume [ml]	description
WE-AN30-577-T-050	50	Anaerobic sealant for threaded elements. Used in hydraulic and pneumatic systems. High viscosity, medium durability. Disassembly possible, maximum clearance of 0.50 mm, meets the requirements of BAM certificate - can be used in installations exposed to oxygen (max. working temperature +60°C, max. working pressure of oxygen 10 bar). Working temp.: from -60°C up to +150°C. T - type tube container.



code	volume [ml]	description
WE-AN30-280-P-020	20	Anaerobic sealant for threaded elements used in passive materials without activating agent. Increased viscosity, high durability. Disassembly very difficult, maximum clearance of 0.20 mm. Working temp.: from -60°C up to +180°C. P - type pen container.
WE-AN30-280-P-050	50	



code	volume [ml]	description
WE-DF-17-175	175	Sealing thread made entirely of PTFE. Permanent and safe sealing for most threaded metal and plastic pipe connections. Non-flammable, superior chemical and temperature resistance from -200°C up to +240°C.

## MACHINES AND ACCESSORIES - protection and sealing

### Threadlockers



code	volume [ml]	description
WE-AN30-260-P-020	20	Thread-locking fluid - for use in passive materials without activating agent, medium viscosity, high durability - difficult disassembly. Working temp.: from -60°C up to +180°C. P - type pen container
WE-AN30-260-P-050	50	

### Cyanoacrylic glues



code	package capacity	description
WE-VA100-P-003	3 g	Medium viscosity, fast hardening, general purpose glue for plastics, rubber and metals in different combinations of the three. P - type pen container, T - tube.
WE-VA100-T-012	12 g	
WE-VA-AS	150 ml	Activating agent for porous surfaces as well as for hardening acceleration of WE-VA glues.

### Metal sprays



code	volume [ml]	description
WE-ZSN-400	400	Zinc anticorrosive coating, 70% of zinc in dry coating (99% pure), thermal resistance up to +500°C.
WE-A-100	400	Aluminium pigments of >99.5% purity, thermal resistance up to +800°C, abrasion resistant.
WE-A-400	400	Aluminium pigments of >99.5% purity, thermal resistance up to +800°C, abrasion resistant, high gloss.

### Cleaning sprays



code	volume [ml]	description
WE-W44T-400	400	High quality maintenance and preservation spray used in industry and workshop applications. W44T loosens seized screw connections, dispels moisture, eliminates squeaking and creaking, cleans dirty metal surfaces, protects and cares for all tools and machines.
WE-CLEANER-S-0500	500	Degreaser for surface preparation. Cleans and degreases metals, glass, ceramics, wood. Removes old solid grease. Evaporates quickly leaving no spots on the surface.

# MACHINES AND ACCESSORIES - protection and sealing

## Assembly pastes and sprays



code	package capacity	description
WE-ASW-0030 (container)	30 g	Anti-Seize „High Tech“ assembly pastes ensure protection against corrosion, seizure, „cold welding“, especially on stainless steel surfaces. Exhibit perfect slipping properties, resistance to salty water, acids and bases, thermal resistance up to +1400°C, high pressure resistance (to 230 N/mm <sup>2</sup> ). Eliminate squeaking and creaking, possess good sealing properties, allow for easy assembly and disassembly of components. Economical use (1 kg per ca. 40 ÷ 50m <sup>2</sup> ), free from toxic metals, NLGI - class 1.
WE-ASW-0120 (container)	120 g	
WE-ASW-400 (spray)	400 ml	

## Adhesive spray greases



code	volume [ml]	description
WE-BFS-500	500	High purity medical-grade grease free of resins and acids. Developed especially for cleaning and care of clean metal surfaces in food, pharmaceutical and cosmetic industry. Holds NSF H1 certificate.
WE-AL-H-400	400	Odourless and tasteless high-temperature grease used in food industry. For ball and sliding bearing, shafts, gears. NLGI Class 1; white yellowish colour, temperature resistant from -40°C up to +160°C. Holds NSF H1 certificate for direct contact with food.
WE-USGMO-400	400	General purpose spray with MoS <sub>2</sub> . Highly adhesive and resistant to high pressures grease with MoS <sub>2</sub> as an additive. Ensures smooth operation of machine subassemblies and protects against corrosion.

## Leak detection sprays



code	volume [ml]	description
WE-LDS-400	400	For fast and reliable location of leaks and cracks on connections as well as gas installations and air-compressed systems. Does not cause corrosion, non-flammable and soft to the skin. Tested according to DIN-DVGW standard.

## Assembly silicone



code	volume [ml]	description
WE-BS-085	85	Special silicone resistant to oils and high temperatures up to +300°C. Tube type container.

## MACHINES AND ACCESSORIES - protection and sealing

### Protective products



code	package capacity	description
WE-PR88-100	100 g	Hand protective cream - traditional means of skin protection at work when in contact with oily and greasy dirt as well as with strongly adhesive dirt. Protects the skin against oils, fat, lacquers, graphite, carbon black, tar, resin, polyester, silicone, and mineral fibre.
WE-PR88-100	1000 g	

### Maintenance products



code	volume [ml]	description
AZ-PENETRATOR	500	<ul style="list-style-type: none"> <li>- Excellent lubricant for precision instruments.</li> <li>- Penetration, lubrication, dehumidification, protection against corrosion.</li> <li>- Removes moisture and dries out electronic devices.</li> <li>- Enables unscrewing rusted screws, nuts, etc.</li> <li>- For surface maintenance and corrosion prevention.</li> <li>- Removes impurities from metal parts.</li> <li>- Does not contain silicones.</li> </ul>



code	volume [ml]	description
AZ-CLEANER	500	<ul style="list-style-type: none"> <li>- Removes fats, tar, oils, grease, dirt, adhesive remainders.</li> <li>- Does not contain solvents.</li> <li>- Does not cause corrosion.</li> </ul>

### Silicone lubricant



code	volume [ml]	description
AZ-SILIKON	500	<ul style="list-style-type: none"> <li>- Permanent.</li> <li>- Does not contain petroleum oils.</li> <li>- Resistant to elevated temperature (up to +176°C).</li> <li>- Protects components.</li> <li>- Does not stain.</li> </ul>

## TECHNICAL INFORMATION

### Table of hose material chemical resistance

The table below is a guide to the initial selection of hose and sealing material suitable for particular operating conditions. The characteristics given in the table apply to the resistance at +20°C.

Please contact Sales or Technical Department of TUBES INTERNATIONAL® to match the hose material correctly with the application.

symbol	material	characteristics
<b>EPDM</b>	ethylene propylene diene rubber	excellent resistance to hot water and steam, good resistance to the solutions of acids, bases, salts, ketones, formaldehydes, glycol-based coolants
<b>EPM</b>	ethylene propylene rubber	good resistance (better than EPDM) to the solutions of acids, bases, salts, ketones, formaldehydes, industrial alcohols, glycols
<b>NR</b>	natural rubber	excellent resistance to abrasion and low temperatures
<b>NBR</b>	nitrile butadiene rubber (buna-n)	excellent resistance to oils, fats, petrochemical products (petrol, diesel oil)
<b>CR</b>	chloroprene rubber (neoprene)	excellent resistance to ozone, weather conditions; flame retardant, good resistance to freon-based refrigerants and oils
<b>SBR</b>	styrene butadiene rubber	excellent resistance to abrasion, low production cost
<b>FPM / FKM</b>	fluorocarbon rubber (Viton)	excellent resistance to petrochemical products (petrol, diesel oil), aromatic compounds and many acids and bases, good resistance to high temperatures
<b>UPE (UHMWPE)</b>	ultra-high-molecular-weight polyethylene	excellent resistance to most acids, bases and many other aggressive chemicals in elevated, though not very high temperatures
<b>PTFE</b>	polytetrafluoroethylene (Teflon)	excellent temperature and chemical resistance
<b>PVC</b>	polyvinyl chloride	good resistance to acids and bases solutions at room temperature, low production cost
<b>PU</b>	polyurethane	excellent resistance to abrasion, good resistance to oils and petrochemical products
<b>PA</b>	polyamide (nylon)	good resistance to solvents, paints, varnishes, adhesives

**A** - excellent resistance, suitable for continuous operation,

**B** - good resistance, intermittent operation,

**C** - limited resistance, limited use,

**X** - no resistance,

- - no data.



# TECHNICAL INFORMATION

## Table of hose material chemical resistance

SUBSTANCE	EPDM	EPM	NR	NBR	CR	SBR	FPM	UPE	PTFE	PVC	PU	PA
Acetic acid 30%	A	A	B	C	B	B	C	A	A	C	X	C
Acetic aldehyde 50%	A	A	C/X	X	C	X	X	C/X	A	X	X	B
Acetic anhydride	C	B	B	C	B	B	X	A	A	-	X	B
Acetone	A	A	X	X	X	C	X	A/B	A	X	X	A/B
Acetyl chloride	X	X	X	X	X	X	A	-	A	-	X	-
Acetylene	A	A	B	A	B	B/C	A	-	A	A/B	B	A
Adipic acid	B	A	C	B	C	B	-	A	A	B	A	-
Aluminium acetate	B	A	A	B	B	B	X	-	A	B	X	-
Aluminium fluoride	B	A	B	A	A	A	A	A	A	-	C	X
Aluminium nitrate	B	A	A	A	A	A	A	A	A	B	C	-
Aluminium sulphate	B	A	A	A	A	A	A	A	A	A	X	X
Ammonium carbonate	B	A	A	X	A	A	-	A	A	-	B	B
Ammonium chloride	B	A	A	A	A	A	A	A	A	B	A	X
Ammonium chloride (sal ammoniac)	A	A	A	A/B	A	A	A	A	A	A	B	X
Ammonium hydroxide	A	A	X	X	A	X	B	A	A	B	X	A
Ammonium nitrate	B	A	C	A	A	B	-	A	A	-	X	A
Ammonium nitrite	B	A	A	A	A	A	-	A	A	-	-	-
Ammonium phosphate	B	A	A	A	A	A	-	A	A	C	-	A
Ammonium sulphate	B	A	A	A	A	A	X	A	A	B	A	A
Amyl acetate	X	C	X	X	X	X	X	A	A	X	X	A
Amyl alcohol (pentanol)	A	A	B	B	B	B	B	A	A	A	X	A
Anhydrous ammonia	contact Sales or Technical Department for proper hose selection											
Anhydrous bromine	X	X	X	X	X	X	A	X	A	-	-	-
Aniline	B	A	X	X	X	X	C	A	A	-	X	X
Aniline dyes	B	A	B	X	B	B	B	-	A	-	X	X
Aniline hydrochloride	C	B	B	B	X	X	B	-	-	-	-	-
Animal fats	C	B	X	A	B	X	A	A	A	-	C	A
Aqua ammonia - ammonia water	contact Sales or Technical Department for proper hose selection											
Aqua regia	C	C	X	X	X	X	B	-	A	X	X	X
Argon	A	A	A	A	A	A	A	A	A	A	A	A
Arsenic acid	B	A	B	A	A	A	A	A	A	-	C	-
Arsenic trichloride	X	C	X	A	A	-	-	-	-	-	-	-
Asphalt	contact Sales or Technical Department for proper hose selection											
Barium chloride	B	A	A	A	A	A	A	A	A	B	B	X
Barium sulphate	B	A	A	A	A	A	A	A	A	-	-	-
Barium sulphide	B	A	A	A	A	B	A	A	A	B	A	C
Beer	A	A	A	A	A	A	A	A	A	-	X	B
Benzene	X	X	X	X	X	X	A/B	C/X	A	X	X	A
Benzoic acid	X	C	X	C	X	X	A	A	A	-	X	B
Benzyl alcohol	B	B	X	X	B	X	A	A	A	X	X	X
Benzyl benzoate	C	B	X	X	X	X	A	-	A	-	-	-
Benzyl chloride	X	X	X	X	X	X	A	A/B	A	-	-	-
Bituminous tar	X	C	X	B	C	X	A	-	A	-	-	-
Bordeaux mixture	B	A	B	B	B	B	A	A	A	B	-	-
Boric acid	B	A	A	A	A	A	A	A	A	B	A	A
Brine (NaCl)	A	A	A	A	A	A	A	A	A	A	A	A
Bromine trifluoride	X	X	X	X	X	X	X	-	-	-	-	-

# TECHNICAL INFORMATION

## Table of hose material chemical resistance

SUBSTANCE	EPDM	EPM	NR	NBR	CR	SBR	FPM	UPE	PTFE	PVC	PU	PA
Bromine water	B	B	X	X	X	X	A	-	A	-	-	-
Bromotoluene	X	X	X	X	X	X	A	-	A	-	-	-
Bunker oil	X	X	X	A	X	X	A	A	A	-	B	-
Butadiene	X	C	X	X	X	X	A	C	A	-	X	-
Butane	X	X	X	A	A	X	A	A	A	-	A	A
Butter	B	A	X	A	B	X	A	A	A	-	-	-
Butyl acetate	X	C	X	X	X	X	X	A	A	X	X	-
Butyl alcohol (butanol)	A/B	B	A	A	A	A	A	A	A	B	B	B
Butyl benzoate	C	B	C	X	X	B	A	-	A	-	-	-
Butyl cellosolve	B	A	X	C	C	X	X	-	A	-	A	-
Butyl stearate	X	C	X	B	X	X	A	A	A	-	-	-
Butylamine	B	A	X	C	X	X	X	-	A	-	-	-
Butyric aldehyde	C	B	X	X	C	X	X	-	A	-	X	-
Calcium acetate	B	A	A	B	B	X	X	A	A	-	X	-
Calcium chloride	B	A	A	A	A	A	A	A	A	C	A	C
Calcium hydroxide	A	A	A	A	A	A	A	A	A	B	A	A
Calcium hypochlorite	A	A	C	B	C	C	A	A	A	B	X	X
Calcium nitrate	B	A	A	A	A	A	A	A	A	-	A	A
Calcium sulphide	B	A	B	A	A	B	A	A	A	-	A	-
Carbitol	C	B	B	B	B	B	B	A	A	-	X	-
Carbon dioxide	C	B	B	A	B	B	A	A	A	B	A	A
Carbon disulphide	X	X	X	C	X	X	A	X	A	X	X	X
Carbon monoxide	B	A	B	B	B	B	A	A	A	B	B	A
Carbon tetrachloride	X	X	X	C	X	X	A	C	A	X	X	B
Carbonic acid	B	A	A	B	A	B	A	A	A	C	X	X
Castor oil	C	B	C	A	A	C	A	A	A	-	B	A
Cellosolve	C	B	X	X	X	X	C	-	A	-	-	-
Chinese wood oil	X	X	X	A	B	X	A	A	A	-	C	-
Chlorine	contact Sales or Technical Department for proper hose selection											
Chlorine dioxide	X	C	X	X	X	X	A	-	A	-	-	-
Chloroacetic acid	B	A	X	X	X	X	X	X	A	-	X	X
Chloroacetone	B	A	B	X	C	X	X	-	A	-	X	-
Chlorobenzene	X	X	X	X	X	X	A	B/C	A	X	X	B
Chlorobutadiene	X	X	X	X	X	X	A	-	A	-	-	-
Chloroform	X	X	X	X	X	X	A	A/B	A	X	X	X
Chlorotoluene	X	X	X	X	X	X	A	-	A	-	X	-
Chromic acid 50%	B	A	X	X	C	X	B	A	A	B	X	X
Citric acid	B	A	A	A	A	A	A	A	A	C	A	A
Cobalt	B	A	A	A	A	A	A	-	-	-	-	-
Coconut oil	X	C	X	A	B	X	A	A	A	-	C	-
Coke-oven gas	X	X	X	X	X	X	A	-	A	-	X	A
Copper acetate	B	A	B	B	B	X	X	-	A	-	-	-
Copper chloride	B	A	B	A	B	A	A	A	A	B	B	C
Copper cyanide	B	A	A	A	A	A	A	A	A	-	A	-
Copper sulphate	B	A	B	A	A	B	A	A	A	B	B	X
Corn oil	X	C	X	A	C	X	A	A	A	-	B	B
Cottonseed oil	B	B	X	A	B	X	A	A	A	-	B	A

# TECHNICAL INFORMATION

## Table of hose material chemical resistance

SUBSTANCE	EPDM	EPM	NR	NBR	CR	SBR	FPM	UPE	PTFE	PVC	PU	PA
Creosote (coal tar)	X	X	X	A	B	X	A	A	A	X	C	X
Cresol	X	X	X	X	C	X	A	-	A	C	X	X
Cresylic acid	X	X	X	X	C	X	A	A	A	X	X	-
Crude oil	X	X	X	A	B	X	A	A	A	B	A	A
Cumene (isopropylbenzene)	X	X	X	X	X	X	A	-	A	-	X	-
Cyclohexane	X	X	X	A	C	X	A	A	A	C	B	A
Cyclohexanol	X	C	X	C	A	X	A	A	A	C	-	A
Cyclohexanone	B	B	X	X	X	X	X	A	A	X	X	A
Decalin	X	X	X	X	X	X	A	A	A	-	-	-
Denatured alcohol	B	A	A	A	A	A	A	A	A	-	-	-
Diacetone	B	A	X	X	X	X	X	A	A	-	-	-
Diacetone alcohol	A	A	X	X	C/X	X	X	A	A	X	X	B
Dibenzyl ether	C	B	X	X	C	X	X	-	A	-	-	-
Dibutyl ether	X	C	X	X	C	X	C	-	A	-	C	-
Dibutyl phthalate	C	B	X	X	X	X	C	A	A	-	X	A
Dibutyl sebacate	C	B	X	X	X	X	B	-	A	-	X	-
Dibutylamine	B	A	X	X	X	X	X	-	A	-	X	-
Dichlorobenzene	X	X	X	X	X	X	A	-	A	X	X	A
Dichloroethylene	X	C	X	X	X	X	B	C/X	A	X	X	A
Dichloro-isopropyl ether	X	C	X	X	X	X	C	-	A	-	-	-
Diesel oil	X	X	X	A	C	X	A	A	A	B	X	A
Diethyl sebacate	C	B	X	B	X	X	B	-	A	-	X	-
Diethylamine	B	A	B	B	B	B	X	A	A	C	-	-
Diethylaminobenzene	X	X	X	X	X	X	A	-	A	-	-	-
Diethylene glycol	A	A	A	A	A	A	A	A	A	B	X	-
Diisobutylene	B	A	X	B	X	X	A	A	A	-	-	-
Diisopropyl ketone	B	A	X	X	X	X	X	-	A	-	-	-
Diisopropylbenzene	X	X	X	X	X	X	A	-	A	-	-	-
Dimethyl phthalate	B	A	X	X	X	X	B	-	A	-	-	-
Dimethylformamide	B	A	X	B	C	X	X	A	A	X	-	-
Dinitrotoluene	X	X	X	X	X	X	A	-	A	-	-	-
Diocetyl phthalate	C	B	X	C	X	X	B	-	A	-	X	B
Diocetyl sebacate	C	B	X	X	X	X	B	-	-	-	-	-
Dipentene	X	X	X	B	X	X	A	-	A	-	X	-
Diphenyl (phenylbenzene)	X	X	X	X	X	X	A	-	A	-	-	-
Dowtherm, dauterm	X	X	X	X	X	X	A	-	A	-	-	C
Ethane	X	X	X	A	B	X	A	A	A	-	-	-
Ethanolamine	B	A	B	B	B	B	X	-	A	-	-	-
Ethyl acetate	B	A	X	X	C	X	X	A	A	X	X	A
Ethyl acetoacetate	B	A	C	X	C	C	X	A	A	-	-	-
Ethyl alcohol (ethanol)	A	A	A	A	A	A	C	A	A	B	X	A
Ethyl benzoate	B	A	A	X	X	A	A	-	A	-	-	-
Ethyl cellosolve acetate	C	B	X	X	X	X	X	-	A	-	X	C
Ethyl cellulose	C	B	B	B	B	B	X	-	A	-	B	C
Ethyl chloride	X	C	X	C	X	X	A	A/B	A	-	C	A
Ethyl ether (ether)	X	X	X	X	C	X	X	C	A	X	B	B
Ethyl formate	C	B	X	X	B	X	C	-	A	-	-	-

# TECHNICAL INFORMATION

## Table of hose material chemical resistance

SUBSTANCE	EPDM	EPM	NR	NBR	CR	SBR	FPM	UPE	PTFE	PVC	PU	PA
Ethyl silicate	B	A	B	A	A	B	A	-	A	-	-	-
Ethylbenzene	X	X	X	X	X	X	A	A	A	-	-	-
Ethylene	C	B	C	A	C	C	A	A/B	A	-	-	-
Ethylene chloride	X	C	X	X	X	X	A	B/C	A	-	-	-
Ethylene chlorohydrin	C	B	B	X	B	B	A	-	A	-	X	-
Ethylene glycol	A	A	A	A	A	A	A	A	A	B	A	A
Ethylenediamine	B	A	A	A	A	B	X	-	A	-	X	-
Fatty acids	X	C	X	B	B	X	A	A	A	B	-	A
Fish-liver oil	X	X	X	A	X	X	A	-	A	-	-	-
Fluoric grease	B	A	B	A	B	C	B	-	A	-	-	-
Fluorobenzene	X	X	X	X	X	X	A	-	A	-	-	-
Fluoroboric acid	B	A	A	B	A	A	-	A	A	-	-	-
Formaldehyde (methanal)	A	A	B	C	B	B	X	A	A	C	X	A
Formic acid	B	A	B	B	A	A	C	A	A	C	X	X
Freon 114	B	A	A	A	A	A	B	B	A	-	-	-
Freon 12	C	B	B	A	A	A	B	A/B	A	-	B	A
Freon 13 - (chlorotrifluoromethane)	A	A	A	A	A	A	A	-	A	-	-	-
Freon 21 - (dichlorofluoromethane)	X	X	X	A	X	X	X	-	A	-	-	-
Freon 22 - (chlorodifluoromethane)	B	A	B	C	A	A	X	-	A	-	X	X
Fuming sulphuric acid (oleum)	X	X	X	X	X	X	A	X	A	X	X	X
Furfural	B	A	X	X	C	X	X	A	A	-	-	-
Gallic acid	B	A	B	B	B	B	B	A	A	B	X	-
Gaseous hydrogen	contact Sales or Technical Department for proper hose selection											
Gelatine	B	A	A	A	A	A	A	A	A	B	-	-
Glacial acetic acid 100%	B	A	B	C	X	B	C	A	A	B	X	X
Glucose	A	A	A	A	A	A	A	A	A	B	X	B
Glycerine	A	A	A	A	A	A	A	A	A	B	X	A
Green liquor	B	A	B	B	B	B	B	A	A	-	-	C
Helium	A	A	A	A	A	A	A	A	A	A	A	A
Hexafluorosilicic acid	C	B	B	A	B	C	B	A	A	B	-	A
Hexane	X	X	X	A	B	X	A	A	A	C	B	A
Hydraulic oil (petroleum, mineral)	X	X	X	A	B	X	A	A/B	A	-	A	A
Hydrobromic acid	B	A	A	X	X	X	A	A	A	B	X	X
Hydrochloric acid <20%	A	A	B	B	B	B	A	A	A	A	X	X
Hydrochloric acid 37%	A/B	A/B	B	C	B	B	A	A	A	X	X	X
Hydrocyanic acid	B	A	B	B	B	B	B	A	A	-	-	B
Hydrofluoric acid <50%	A	A	X	X	X	X	-	A	A	-	-	X
Hydrofluoric acid >50%	C	C	X	X	X	X	-	A	A	C	X	X
Iodine	X	X	X	X	X	X	X	A	A	-	-	-
Iron (II) sulphate	B	A	A	A	A	A	A	A	A	B	-	X
Iron III chloride	B	A	A	A	A	A	A	A	A	B	A	X
Iron III nitrate	B	A	A	A	A	A	A	A	A	B	A	A
Isobutyl alcohol (isobutanol)	A	A	A	B	A	B	A	A	A	B	-	-
Isooctane	X	X	X	A	B	X	A	A	A	B	A	A
Isopropyl acetate	C	B	X	X	X	X	X	A	A	X	X	-
Isopropyl alcohol (isopropanol)	A	A	A	B	B	B	A	A	A	B	X	A
Isopropyl chloride	X	X	X	X	X	X	B	-	A	-	-	-

# TECHNICAL INFORMATION

## Table of hose material chemical resistance

SUBSTANCE	EPDM	EPM	NR	NBR	CR	SBR	FPM	UPE	PTFE	PVC	PU	PA
Isopropyl ether	X	X	X	B	C	X	X	A	A	-	A	-
Lactic acid	A	A	A	A	A	A	A	A	A	A	B	X
Lard	C	B	X	A	B	X	A	A	A	-	-	-
Lavender oil	X	X	X	B	X	X	A	B	A	X	X	-
Lead (II) acetate	B	A	A	B	A	X	X	A	A	B	X	-
Lead (II) nitrate	B	A	A	A	A	A	-	A	A	-	-	-
Lead sulfamate	B	A	B	B	A	B	A	-	A	-	-	-
Linseed oil	X	C	X	A	B	X	A	A	A	-	B	A
Liquefied natural gas (LNG)	contact Sales or Technical Department for proper hose selection											
Lubricating oils (petroleum)	X	X	X	A	B	X	A	B/C	A	-	A	A
Magnesium chloride	B	A	A	A	A	A	A	A	A	B	A	X
Magnesium hydroxide	A	A	B	B	A	B	A	A	A	B	B	X
Magnesium sulphate	B	A	B	A	A	B	A	A	A	B	-	A
Maleic acid	B	A	C	X	C	C	A	A	A	-	-	C
Maleic anhydride	C	B	C	X	C	C	X	-	-	-	-	-
Malic acid	B	A	B	B	B	C	A	-	A	B	-	-
Medicinal cod-liver oil	B	A	X	A	B	X	A	-	A	-	-	-
Mercury	B	A	A	A	A	A	A	A	A	-	B	A
Mesityl oxide	C	B	X	X	X	X	X	-	A	-	X	-
Methane	X	X	X	A	B	X	B	X	A	-	-	-
Methyl acetate	B	A	C	X	B	C	X	A	A	X	X	A
Methyl alcohol (methanol)	A	A	A	A	A	A	X	A	A	B	X	A
Methyl bromide	C	B	X	B	X	X	A	C/X	A	X	-	A
Methyl butyl ketone	B	A	X	X	X	X	X	-	A	-	X	-
Methyl cellosolve	C	B	X	B	B	X	X	-	A	-	X	-
Methyl chloride	X	C	X	X	X	X	B	A/B	A	-	X	X
Methyl ethyl ether	X	X	X	A	C	X	A	-	A	-	-	-
Methyl ethyl ketone (MEK)	B	A	X	X	C	X	X	A	A	X	X	A
Methyl isobutyl ketone	B	B	X	X	X	X	X	-	A	-	X	A
Methyl oleate	X	X	X	X	X	X	A	X	A	-	-	A
Milk	B	A	B	A	A	B	A	A	A	-	-	-
Mineral oil	X	C	X	A	B	X	A	B	A	B	A	A
Monoethanolamine	B	A	B	X	X	B	X	A	A	-	X	-
Naphtha	X	X	X	B	C	X	A	B/C	A	C	A	A
Naphtha (refined)	X	X	X	A	B	X	A	-	A	C	A	A
Naphthalene	X	X	X	X	X	X	A	A	A	C	C	A
Naphthenic acid	X	X	X	B	X	X	A	-	A	-	-	-
Natural gas	X	X	B	A	A	B	A	X	A	-	C	A
Nickel acetate	B	A	A	B	B	X	X	A	A	-	X	-
Nickel chloride	B	A	A	A	A	A	A	A	A	-	C	X
Nickel sulphate	B	A	B	A	A	B	A	A	A	-	-	A
Nitric acid <40%	X	X	X	X	B	X	A	A	A	X	X	X
Nitric acid >40%	X	X	X	X	X	X	C	C/X	A	-	-	-
Nitrobenzene	C	B	X	X	X	X	B	A/B	A	X	X	A
Nitroethane	C	B	B	X	C	B	X	A	A	-	X	-
Nitrogen	A	A	A	A	A	A	A	A	A	A	A	A
Nitromethane	C	B	B	X	B	B	X	-	A	-	X	-

# TECHNICAL INFORMATION

## Table of hose material chemical resistance

SUBSTANCE	EPDM	EPM	NR	NBR	CR	SBR	FPM	UPE	PTFE	PVC	PU	PA
Octachlorotoluene	X	X	X	X	X	X	A	-	A	-	-	-
Octyl alcohol (octanol)	X	C	B	B	A	B	A	A	A	-	X	-
Oleic acid	X	X	X	C	C	X	B	A	A	B	B	A
Olive oil	C	B	X	A	B	X	A	A/B	A	-	A	-
Ortho-dichlorobenzene	X	X	X	X	X	X	B	X	A	-	X	-
Oxalic acid	B	A	B	B	B	B	B	A	A	-	A	X
Oxygen	contact Sales or Technical Department for proper hose selection											
Ozone	B	A	X	X	C	X	A	A/B	A	B	B	X
Palmitic acid	C	B	C	A	B	B	A	A/B	A	B	A	X
Para-isopropyltoluene	X	X	X	X	X	X	A	-	A	-	X	-
Peanut oil	X	C	X	A	C	X	A	A	A	-	-	-
Pentachloroethylbenzene	X	X	X	X	X	X	A	-	-	-	-	-
Perchloric acid	C	B	X	X	B	X	A	-	A	-	X	C
Perchloroethylene (tetrachloroethylene)	X	X	X	B	X	X	A	B	A	X	X	X
Petrol	X	X	X	A	C	X	A	A	A	B	B	A
Phenol (carbolic acid)	C	B	X	X	C	-	A	A/B	A	C	X	X
Phenyl benzene	X	X	X	X	X	X	A	-	A	-	-	-
Phenylhydrazine	C	B	A	X	X	B	A	-	A	-	-	-
Phorone (diisopropylidene acetone)	X	C	X	X	X	X	X	-	A	-	-	-
Phosphoric acid 20%	B	A	B	B	B	B	A	A	A	B	X	X
Phosphoric acid 80%	B	A	C	X	B	C	A	A	A	-	X	C
Phosphorous trichloride	B	A	X	X	X	X	A	A	A	-	-	-
Picric acid	B	A	B	B	B	C	B	A	A	-	X	X
Pine oil	X	X	X	A	X	X	A	B	A	B	-	-
Polyvinyl acetate emulsion	B	A	B	-	B	X	B	A	A	-	-	-
Potassium acetate	B	A	A	B	B	X	X	A	A	-	X	-
Potassium chloride	B	A	A	A	A	A	A	A	A	A	A	A
Potassium cuprocyanide	A	A	A	A	A	A	A	-	-	-	-	-
Potassium cyanide	B	A	A	A	A	A	A	A	A	B	A	A
Potassium dichromate	B	A	C	B	B	B	A	A	A	-	B	-
Potassium hydroxide	A	A	B	B	B	B	X	A	A	B	C	C
Potassium nitrate	B	A	A	A	A	A	A	A	A	B	A	A
Potassium sulphate	B	A	B	A	A	A	A	A	A	B	B	A
Propane	X	X	X	A	B	X	A	A	A	B	A	A
Propyl acetate	C	B	X	X	X	X	X	A	A	X	X	-
Propyl alcohol (propanol)	A	A	A	A	A	A	A	A	A	B	C	-
Propyl nitrate	B	A	X	X	X	X	X	-	-	-	-	-
Propylene	X	X	X	X	X	X	A	-	A	-	X	-
Propylene glycol	A	A	A	A	A/B	A	A	A	A	A	A/B	A
Pyridine	B	A	X	X	X	X	X	A	A	X	-	-
Salicylic acid	B	A	A	B	A	B	A	A	A	-	-	-
Salt water	A	A	A	A	A	A	A	A	A	B	A	A
Sewage	B	B	B	A	B	B	A	A	A	-	X	A
Silicone grease	B	A	C	A	A	C	A	A	A	-	-	-
Silicone oils	B	A	C	A	A	C	A	A	A	B	-	-
Silver nitrate	B	A	A	B	A	A	A	A	A	B	A	-
Skydrol 500	B	A	X	X	X	X	X	-	A	-	C	-

# TECHNICAL INFORMATION

## Table of hose material chemical resistance

SUBSTANCE	EPDM	EPM	NR	NBR	CR	SBR	FPM	UPE	PTFE	PVC	PU	PA
Skydrol 7000	B	A	X	X	X	X	B	-	A	-	-	-
Soap solutions	A	A	B	A	B	A	A	A	A	B	C	A
Soda lye 50%	A	A	B	B	B	B	A	A	A	-	X	X
Soda, raw sodium carbonate	B	A	A	A	A	A	A	A	A	-	-	A
Sodium acetate	B	A	A	B	B	X	X	A	A	-	A	A
Sodium bicarbonate	A	A	A	A	A	A	A	A	A	B	-	-
Sodium bisulfite	B	A	A	A	A	B	A	A	A	B	-	-
Sodium borate (borax)	B	A	A	A	A	A	A	A	A	B	-	-
Sodium chloride (brine)	B	A	A	A	A	A	A	A	A	B	A	A
Sodium cyanide	B	A	A	A	A	A	A	A	A	B	-	A
Sodium hydroxide	A	A	A	B	B	A	B	A	A	B	B	C
Sodium hypochlorite 15%	A	A	X	X	B/C	X	A	A	A	A	X	X
Sodium metaphosphate	B	A	A	A	B	A	A	A	A	-	-	-
Sodium nitrate	B	A	B	B	B	A	-	A	A	B	X	A
Sodium perborate	B	A	B	B	B	B	A	A	A	B	-	A
Sodium peroxide	B	A	B	B	B	B	A	A	A	B	X	-
Sodium phosphate	B	A	A	A	B	A	A	A	A	B	A	A
Sodium silicate	B	A	A	A	A	A	A	A	A	B	-	A
Sodium sulphate	B	A	B	A	A	B	A	A	A	B	A	A
Sodium thiosulphate	B	A	B	B	A	B	A	A	A	B	A	A
Soybean oil	X	C	X	A	B	X	A	A	A	B	B	A
Steam	A	A	X	X	C	X	X	X	A	-	X	X
Stearic acid	C	B	C	B	B	B	-	A	A	B	A	A
Styrene	X	X	X	X	X	X	B	-	A	X	X	A
Sugar solution	A	A	A	A	A	A	A	A	A	-	-	-
Sulphur	B	A	X	X	A	X	A	A	A	-	-	-
Sulphur chloride	X	X	X	C	C	X	A	A	A	-	-	B
Sulphur dioxide	B	A	B	X	X	B	A	-	A	C	-	X
Sulphur trioxide	C	B	B	X	X	B	A	-	A	-	-	X
Sulphuric acid 10 ÷ 75%	B	A	X	X	X	X	A	A	A	X	X	X
Sulphuric acid 10%	A	A	C	C	B	C	A	A	A	C	X	X
Sulphuric acid 96%	C	C	X	X	X	X	A/B	A	A	X	X	X
Sulphurous acid	B	A	B	B	B	B	A	A	A	B	-	-
Tannic acid (tannin)	B	A	A	A	A	B	A	A	A	C	C	X
Tartaric acid	C	B	C	A	B	X	A	A	A	B	C	X
Terpineol	X	C	X	B	X	X	A	B	A	B	B	-
Tertiary butyl alcohol (tert-butanol)	C	B	B	B	B	B	A	A	A	-	X	-
Tetrachloroethylene	X	X	X	X	X	X	A	B	A	-	X	C
Tetraethyl lead	X	X	X	B	B	X	A	-	A	B	-	-
Tin chloride	B	A	A	A	B	A	A	A	A	-	-	A
Toluene	X	X	X	X	X	X	A	B	A	X	X	A
Transformer oil	contact Sales or Technical Department for proper hose selection											
Transmission fluid "A"	X	X	X	A	B	X	A	-	A	-	A	A
Trichloroacetic acid	C	B	C	B	X	B	C	-	A	-	X	-
Trichloroethane	X	X	X	X	X	X	A	-	A	-	X	-
Trichloroethylene	X	X	X	X	X	X	A	C/X	A	X	X	-
Tricresyl phosphate	X	X	X	X	X	C	A	A	A	-	X	-

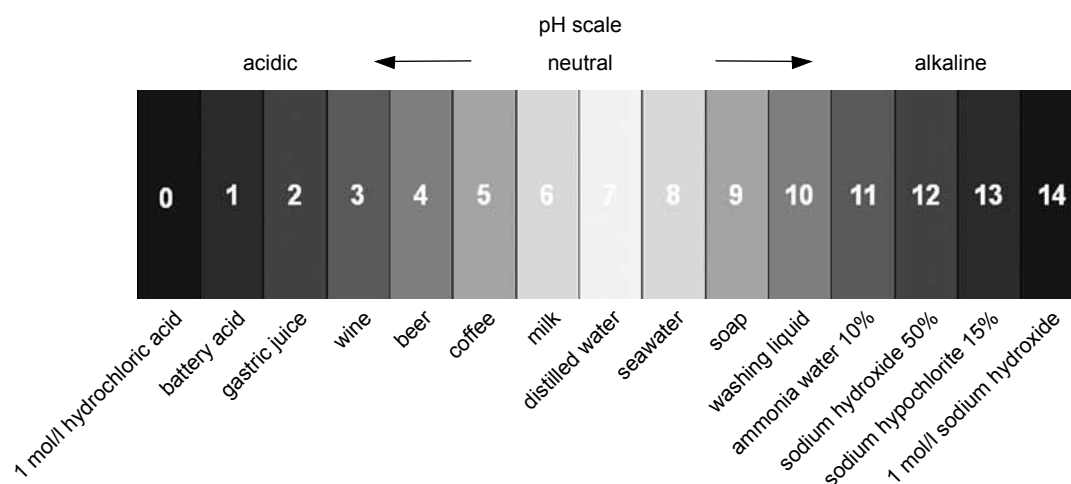
## TECHNICAL INFORMATION

### Table of hose material chemical resistance

SUBSTANCE	EPDM	EPM	NR	NBR	CR	SBR	FPM	UPE	PTFE	PVC	PU	PA
Triethanolamine	B	A	B	B	A	B	X	A	A	C	X	-
Trinitrotoluene	X	X	X	X	B	X	A	-	A	-	-	-
Turbine oil (lubricating)	contact Sales or Technical Department for proper hose selection											
Turpentine	X	X	X	B	X	X	A	A/B	A	C	A	A
Vegetable oils	X	C	X	A	C	X	A	A	A	-	-	-
Vinegar (acetic acid 10%)	B	A	B	B	B	B	B	A	A	B	X	A
Vinyl chloride	X	X	X	X	X	X	A	A/B	A	X	-	-
Vinylacetylene	B	B	B	A	B	B	A	-	A	-	-	-
Water	A	A	A	A	A	A	A	A	A	A	A	A
Whisky, wines	B	A	A	A	A	A	A	A	A	-	X	A
White mineral oil	X	X	X	A	B	X	A	A	A	-	A	-
Xylene	X	X	X	X	X	X	A	C	A	X	C	A
Zinc chloride	B	A	A	A	A	A	A	A	A	B	A	X
Zinc sulphate	B	A	B	A	A	B	A	A	A	B	-	A

### The pH values of common substances

The pH scale (lat. potentium Hydrogeni) - a scale used to measure the acidity or alkalinity of a solution. The scale ranges from 0 to 14. In other words, the scale describes the activity of hydrogen ions in the solution. The higher the concentration of hydrogen ions, the lower the pH and the more acidic the solution. Depending on the pH value, a solution with  $pH < 7$  is considered acidic, a solution with  $pH = 7$  is neutral and a solution with  $pH > 7$  is alkaline.





# TECHNICAL INFORMATION

## Table of fitting material chemical resistance

The table of chemical resistance is a guide to the initial selection of fitting and coupling material suitable for given operating conditions. The characteristics given in the table apply to the resistance at +20°C.

Please contact Sales or Technical Department of TUBES INTERNATIONAL® to match the fitting material correctly with the application.

symbol	material	characteristics
<b>AL</b>	aluminium	light, limited corrosion resistance, not suitable for acids and high pressure
<b>MS</b>	brass	heavy, limited corrosion resistance, not suitable for acids
<b>BR</b>	bronze	heavy, limited corrosion resistance, not suitable for acids
<b>ST</b>	carbon steel	high tensile strength, not expensive, limited corrosion resistance
<b>MON</b>	monel	high corrosion resistance, very expensive, suitable for alkaline compounds
<b>304</b>	AISI 304 steel	corrosion resistant, heat resistant, readily weldable, suitable for foodstuffs
<b>316L</b>	AISI 316L steel	enhanced corrosion resistance in chemical environment, heat resistant, readily weldable, suitable for foodstuffs
<b>PP</b>	polypropylene	light, for low pressure, corrosion resistance, suitable for acids, not recommended for foodstuffs

**A** - excellent resistance, suitable for continuous operation

**B** - moderate resistance, intermittent operation

**C** - limited resistance, limited use

**X** - no resistance

- - no data

SUBSTANCE	AL	MS	BR	ST	MON	304	316L	PP
Acetic acid 10% ÷ 50%	B	X	X	X	B	A	A	A
Acetic acid 80%	B	X	X	X	A	A	A	A
Acetic anhydride	A	X	B	B	B	A	A	A
Acetone	A	B	B	B	A	A	A	A
Acetylene	A	X	X	B	B	A	A	X
Aluminium chloride (solution)	X	X	X	X	X	X	X	A
Aluminium fluoride	C	X	X	X	A	X	C	X
Aluminium nitrate (saturated)	C	X	A	X	A	B	B	A
Aluminium potassium sulphate (alum)	X	X	X	X	A	X	A	A
Aluminium sulphate	X	X	C	X	B	A	A	A
Ammonium bifluoride	X	X	X	X	B	X	X	-
Ammonium carbonate	X	B	-	C	A	A	A	-
Ammonium caseinate	A	A	A	A	A	A	A	-
Ammonium chloride (dry)	X	X	B	X	B	B	B	A
Ammonium hydroxide	X	X	A	A	A	A	A	A
Ammonium nitrate	B	X	X	X	X	A	A	A
Ammonium perchlorate	X	-	-	X	A	A	A	X
Ammonium phosphate 10 ÷ 40%	X	X	X	X	B	A	A	A
Ammonium sulphate	X	X	C	X	A	X	A	A
Anhydrous ammonia	-	X	X	A	X	A	A	A
Aniline (aminobenzene)	A	X	B	X	B	A	A	A
Aqua ammonia - ammonia water	A	X	X	A	X	A	A	A
Arsenic acid	X	X	X	X	A	A	A	A
Asphalt	A	A	A	B	A	A	A	X
Barium carbonate	X	A	B	B	A	B	B	A
Barium chloride (saturated)	X	B	B	A	B	B	A	A

## TECHNICAL INFORMATION

**Table of fitting material chemical resistance**

SUBSTANCE	AL	MS	BR	ST	MON	304	316L	PP
Barium hydroxide	X	C	C	X	A	A	A	A
Barium sulphate	B	B	B	C	B	A	A	-
Barium sulphide	X	X	A	X	A	A	A	-
Benzaldehyde	B	B	B	X	B	B	A	-
Benzene	A	A	A	A	A	A	A	X
Benzoic acid	B	X	X	X	A	A	A	-
Benzol	A	B	B	B	B	A	A	X
Benzyl alcohol	B	B	B	B	A	A	A	-
Bleacher (12.5% of active chlorine)	X	X	X	X	X	X	X	A
Borax	X	B	B	B	A	A	A	A
Boric acid	B	X	B	X	B	A	A	A
Brine	X	X	B	X	A	B	A	A
Bromic acid	X	X	X	X	X	X	X	-
Butadiene, butylene	A	A	B	B	A	A	A	X
Butane	A	A	A	A	A	A	A	X
Butanoic acid (butyric)	X	A	A	X	A	B	A	A
Butene	A	A	A	A	A	A	A	X
Butyl acetate (dry)	A	B	A	A	A	A	A	X
Butyl alcohol	A	B	A	B	A	A	A	A
Calcium acetate	B	-	B	B	A	A	A	A
Calcium carbonate	A	A	A	A	A	A	-	A
Calcium chloride (saturated)	X	B	A	B	X	B	A	A
Calcium disulphide	X	X	B	X	X	A	B	A
Calcium hydroxide	C	X	X	B	A	A	A	A
Calcium hypochlorite	X	X	X	X	X	X	X	A
Calcium sulphate	X	A	X	X	A	A	A	-
Calcium sulphide	X	X	C	C	B	A	A	-
Carbon (II) oxide (carbon monoxide)	A	A	A	A	A	A	A	-
Carbon dioxide (dry)	A	A	A	A	A	A	A	A
Carbon dioxide (wet)	B	C	C	C	A	A	A	A
Carbon disulphide	A	X	X	B	B	A	A	X
Carbon tetrachloride	X	A	A	A	A	A	A	X
Carbonic acid	A	B	B	B	A	A	A	A
Castor oil	A	A	A	A	A	A	A	A
Caustic potassium KOH	X	X	X	X	A	A	A	A
Caustic soda NaOH	X	X	X	X	A	A	A	A
Chlorine	contact Sales or Technical Department for proper fitting selection							
Chloroform, dry	X	A	A	X	A	A	A	X
Chlorosulphonic acid	X	X	X	X	B	B	B	-
Chromic acid 50%	X	X	X	X	X	X	X	B
Citric acid	C	X	X	X	B	A	A	A
Clorox (sodium hypochlorite 15%)	X	X	X	X	X	X	X	A
Coolant (glycol based)	A	A	A	A	A	A	A	A
Copper (II) chloride (dry)	X	X	X	X	X	X	X	A
Copper cyanide	X	X	X	A	X	B	B	-
Copper sulphate	X	X	X	X	X	A	A	A
Crude oil	A	A	A	A	A	A	A	X

# TECHNICAL INFORMATION

## Table of fitting material chemical resistance

SUBSTANCE	AL	MS	BR	ST	MON	304	316L	PP
Cyclohexane	A	A	A	A	A	A	A	X
Detergents	B	B	B	B	A	A	A	A
Dextrose	A	A	A	A	A	A	A	A
Diacetone alcohol	A	A	B	B	A	B	B	-
Diesel oil	A	A	A	A	A	A	A	B
Diethyl sebacate	-	-	-	-	-	-	-	X
Diethylamine	B	X	X	X	A	A	A	A
Disodium phosphate	X	C	A	B	A	A	A	A
Distilled water	X	B	B	X	A	A	A	A
Ethanolamine	A	-	-	A	A	A	A	A
Ethers	B	B	B	B	B	B	B	X
Ethyl acetate	A	A	A	A	A	A	A	X
Ethyl alcohol	A	B	B	B	B	A	A	A
Ethyl chloride (dry)	B	B	B	B	B	A	A	X
Ethylene chloride	B	B	B	B	B	A	A	X
Ethylene dichloride, dry	X	X	X	X	A	X	X	X
Ethylene glycol	A	A	A	A	A	A	A	A
Ethylene oxide	A	X	X	B	A	A	A	-
Extraction naphtha	A	A	B	B	B	A	A	-
Fluoroboric acid	X	X	X	X	B	X	X	A
Fluosilicic acid <30%	X	X	B	X	A	X	X	-
Formaldehyde 100%	A	B	B	X	B	A	A	A
Formalin (formaldehyde 40%)	A	C	B	X	A	A	A	A
Formic acid <85%	A	C	C	X	B	A	A	A
Gear oil	A	A	A	A	A	A	A	A
Gelatine	A	X	X	X	A	A	A	A
Glucose	B	A	B	B	B	A	A	A
Glycerine	A	A	A	A	A	A	A	A
Glycol ethers (polyols)	-	-	-	A	-	A	A	A
Heating oil	A	A	A	A	A	A	AB	B
Heptane	A	A	A	A	A	A	A	-
Hexane	A	A	A	A	A	A	A	-
Hexyl alcohol (hexanol)	A	A	A	A	A	A	A	-
Hydraulic oil	A	A	A	A	A	A	A	A
Hydrobromic acid <50%	X	X	X	X	X	X	X	A
Hydrochloric acid (muriatic) <37%	X	X	X	X	X	X	X	A
Hydrocyanic acid	A	X	X	X	A	A	A	A
Hydrogen (gas)	A	A	A	A	A	A	A	A
Hydrogen chloride gas, dry	X	B	A	A	A	A	A	A
Hydrogen peroxide 30%	A	X	X	X	A	A	B	A
Hydrogen sulphide (moist)	A	X	C	X	C	B	A	A
Hypochlorous acid 20%	X	X	X	X	X	X	X	A
Iodine, dry 100%	X	X	X	X	A	B	B	X
Iron (II) sulphate	X	X	X	X	X	A	A	-
Iron (III) sulphate	X	X	X	X	B	A	A	A
Iron hydroxide	A	A	A	A	A	A	A	A
Iron II chloride	X	X	X	X	X	X	X	A

# TECHNICAL INFORMATION

## Table of fitting material chemical resistance

SUBSTANCE	AL	MS	BR	ST	MON	304	316L	PP
Iron III chloride	X	X	X	X	X	X	X	A
Iron nitrate 10 ÷ 50%	X	X	X	X	X	B	B	A
Isobutyl acetate	A	B	A	A	A	A	A	X
Isobutyl alcohol (isobutanol)	A	A	A	A	A	A	A	-
Isopropyl acetate	A	A	A	A	A	A	A	X
Isopropyl alcohol (isopropanol)	B	B	B	B	B	A	A	A
Isopropyl ether	A	B	B	A	A	A	A	-
Jet fuel Jet A1	A	A	A	A	A	A	A	X
Ketones	B	B	B	B	B	B	B	-
Lactic acid 25%	X	B	B	X	A	A	A	A
Lactic acid 80%	X	B	X	X	A	A	A	A
Lead (II) acetate	X	X	X	X	B	A	A	A
Lead (II) chloride	X	X	X	X	X	X	X	B
Lead sulphate	X	B	B	X	B	B	A	-
Lime sulphur	X	X	X	X	B	B	B	A
Linolic acid	B	X	C	X	A	A	A	A
Liquid bromine	X	X	X	X	X	X	X	X
Magnesium carbonate	B	-	-	C	A	A	A	A
Magnesium chloride	X	X	B	X	A	B	A	A
Magnesium hydroxide	X	B	A	A	A	A	A	A
Magnesium nitrate	B	B	B	B	B	B	B	A
Magnesium oxide	A	A	A	A	A	A	A	-
Magnesium sulphate	B	A	B	C	A	A	A	A
Maleic acid	A	X	C	X	A	A	A	-
Mercury	X	X	X	B	A	A	A	A
Mercury (II) chloride	X	X	X	X	X	X	X	A
Mercury (II) cyanide	X	X	X	X	B	B	B	-
Methane	A	A	A	A	A	A	A	B
Methyl alcohol (methanol)	B	B	B	B	B	A	A	A
Methyl bromide	X	A	A	B	A	B	A	-
Methyl ethyl ketone (MEK)	A	A	A	B	A	A	A	A
Methyl isobutyl ketone	A	A	A	B	A	A	A	-
Methyl methacrylate	A	-	B	A	A	A	A	-
Methylene chloride	A	B	B	B	A	A	A	X
Milk	A	X	X	X	X	A	A	A
Mine water	X	X	X	X	B	A	A	A
Mineral grease	A	A	A	A	A	A	A	-
Mineral oil	A	A	A	A	A	A	A	A
Monosodium phosphate	X	C	-	B	A	A	A	A
Naphtha	A	A	B	B	B	A	A	-
Naphtha	A	A	A	A	A	A	A	X
Naphthalene	A	A	A	A	A	A	A	X
Nickel sulphate	X	C	C	X	A	A	A	A
Nitric acid 30%	X	X	X	X	X	A	A	A
Nitric acid 65%	X	X	X	X	X	A	A	X
Nitric acid 99%	A	X	X	X	X	B	B	X
Nitrobenzene	A	X	X	A	A	A	A	X

# TECHNICAL INFORMATION

## Table of fitting material chemical resistance

SUBSTANCE	AL	MS	BR	ST	MON	304	316L	PP
Nitrogen	A	A	A	A	A	A	A	A
Octyl alcohol (octanol)	A	A	A	A	A	A	A	-
Oleic acid	B	C	B	B	A	A	A	A
Oxalic acid <10%	B	C	B	X	A	A	A	A
Oxygen	X	A	A	X	A	A	A	A
Palmitic acid (saturated)	B	C	B	C	A	A	A	A
Paraffin	A	A	A	A	A	A	A	A
Pentanol (amyl alcohol)	B	A	A	B	A	A	A	A
Phenol	A	C	X	B	A	A	A	X
Phosphoric acid <50%	X	X	X	X	A	A	A	A
Phosphoric acid <85%	X	X	X	X	C	A	A	A
Photographic solutions	A	A	A	X	A	A	A	A
Picric acid	X	X	X	X	X	B	B	X
Potassium acetate	X	-	-	B	A	A	A	A
Potassium bicarbonate	X	B	B	B	A	A	A	A
Potassium carbonate	X	C	C	B	A	A	A	A
Potassium chlorate 8%	B	X	X	B	A	A	A	-
Potassium chloride 30%	X	X	B	X	A	A	A	A
Potassium chromate 30%	B	A	A	B	A	B	B	-
Potassium cyanide 30%	X	X	X	B	B	B	A	A
Potassium dichromate 30%	A	B	B	B	B	A	A	A
Potassium hydroxide <50%	X	X	X	X	A	A	A	A
Potassium nitrate 80%	A	B	B	B	B	B	B	A
Potassium permanganate	B	B	B	X	B	A	A	-
Potassium sulphate	B	B	B	B	A	A	A	A
Propane	A	A	A	A	A	A	A	X
Propyl alcohol (propanol)	B	B	B	B	B	A	A	-
Propylene glycol	A	A	A	A	A	A	A	A
Propylene oxide	C	X	X	B	X	A	A	-
Pyridine	A	A	A	A	A	A	A	-
Pyrogallol C <sub>6</sub> H <sub>3</sub> (OH) <sub>3</sub>	B	B	B	B	B	B	A	-
Refined oil	A	A	A	A	A	A	A	X
Seawater	X	X	B	X	B	B	B	A
Silicone oil	A	A	A	A	A	A	A	A
Silver nitrate	X	X	X	X	X	B	A	A
Soap solutions	B	B	B	B	B	A	A	A
Sodium acetate	X	-	-	B	A	A	A	A
Sodium bicarbonate	X	B	B	B	A	A	A	A
Sodium bisulphate	X	X	C	X	B	X	B	A
Sodium bisulphite	X	X	C	X	B	B	A	A
Sodium borate	B	B	B	C	B	B	B	A
Sodium carbonate	X	C	C	B	A	A	A	A
Sodium chlorate 50%	X	B	B	X	A	A	A	-
Sodium chloride 30%	X	B	B	X	A	B	A	A
Sodium cyanide	X	X	X	B	X	A	A	A
Sodium dichromate 10%	B	X	X	B	A	B	B	A
Sodium hydroxide <50%	X	X	X	X	A	A	A	A

## TECHNICAL INFORMATION

**Table of fitting material chemical resistance**

SUBSTANCE	AL	MS	BR	ST	MON	304	316L	PP
Sodium hydroxide, dry, 100%	X	X	X	X	A	A	A	A
Sodium hypochlorite <20%	X	X	X	X	X	X	X	A
Sodium metaphosphate	X	X	B	X	A	A	A	A
Sodium nitrate 40%	A	B	A	B	B	A	A	A
Sodium perborate 10%	A	-	X	X	X	X	A	A
Sodium peroxide	X	X	X	X	B	A	A	A
Sodium silicate (water glass)	X	C	C	B	A	A	A	-
Sodium sulphate	B	B	B	B	A	A	A	A
Sodium sulphide	X	X	X	X	A	B	A	A
Sodium thiosulphate	A	X	X	X	B	A	A	A
Steam	A	A	A	A	A	A	A	X
Stearic acid	B	C	B	C	C	A	A	A
Styrene	A	A	A	A	A	A	A	X
Sulphur chloride (monochloride)	X	X	X	X	X	X	X	-
Sulphur dioxide (dry)	B	C	C	B	X	A	A	-
Sulphur trioxide	B	X	X	B	B	A	A	A
Sulphuric acid <20%	X	X	X	X	X	X	A	A
Sulphuric acid >96%	X	X	X	B	X	A	A	C
Sulphuric acid 21% ÷ 95%	X	X	X	X	X	X	X	B
Sulphurous acid 20%	X	X	X	X	X	X	B	A
Tannic acid - tannin	X	A	X	X	B	B	B	A
Tartaric acid	A	A	B	B	A	A	A	A
Tetrachloroethylene	A	B	C	C	A	A	A	X
Tetrahydrofuran	X	-	-	A	B	A	A	-
Tin (II) chloride 15%	X	X	X	X	-	X	X	A
Tin (IV) chloride	X	X	X	X	X	X	X	A
Titanium tetrachloride (dry)	X	X	X	B	B	A	A	A
Toluene (methylbenzene)	A	A	A	A	A	A	A	X
Trichloroethylene, dry	A	A	A	B	A	A	A	X
Triethanolamine	B	-	-	B	A	A	A	A
Triethylamine	A	-	-	A	A	A	A	-
Trisodium phosphate	X	C	A	B	A	A	A	A
Turpentine	B	X	B	C	A	A	A	
Urea	A	A	B	B	A	A	A	A
Vegetable oil	A	B	A	B	A	A	A	A
Vinegar (acetic acid <10%)	B	X	X	X	B	A	A	A
Xylene	A	A	A	A	A	A	A	X
Zinc chloride	X	X	X	X	A	X	X	A
Zinc nitrate	A	A	A	A	A	B	B	A
Zinc sulphate	X	B	B	X	B	A	A	-

# TECHNICAL INFORMATION

## Stainless steel equivalents

		EN 10088 European	PN Polish	AISI / ASTM American	DIN German	GOST Russian	SS Swedish	CSN Czech
stainless and acid-resistant steel	ferrite	1.4000	0H13	410S	X6Cr13	0Ch13	2301	17020
		1.4003			X2CrNi12			
		1.4016	H17	430	C6Cr17	12Ch17	2320	17040
		1.4510	0H17T	430Ti 439	X3CrTi17	08Ch17T		
	martensite	1.4006	1H13	410	X12Cr13	12Ch13 15Ch13L	2302	17021
		1.4021	2H13	420	X20Cr13	20Ch13	2303	17022
		1.4028	3H13	420F	X30Cr13	30Ch13	2304	17023
		1.4031	4H13	420	X39Cr13	40Ch13		17024
		1.4034	4H13	420	X46Cr13	40Ch13		17024
		1.4122	3H17M		X39CrMo17-1			
	austenite	1.4301	0H18N9	304	X5CrNi18-10	08Ch18N10	2332 2333	17240
		1.4306	00H18N10	304L	X2CrNi19-11	03Ch18N11	2352	17249
		1.4307		(304L)	X2CrNi18-9			
		1.4310	1H18N9	301	X10CrNi18-8		2331	17241
		1.4311		304LN	X2CrNiN18-10		2371	
		1.4401	0H17N12M2T	316	X5CrNiMo17-12-2	08Ch16N11M3	2347	17346
		1.4404	00H17N14M2	316L	X2CrNiMo17-12-2		2348	17349
		1.4429		316LN	X2CrNiMoN17-13-3		2375	
		1.4435		316L	X2CrNiMo18-14-3	03Ch17N14M3	2353	17350
		1.4539	0H22N24 M4TCu	904L N 08904	X1NiCrMoCu 25-20-5		2562	
		1.4541	1H18N9T 1H18N10T 0H18N10T	321	X6CrNiTi18-10	06Ch18N10T 08Ch18N10T 09Ch18N10T 12Ch18N10T	2337	17248 17247
		1.4571	H17N13M2T H18N10MT	316Ti	X6CrNiMoTi17-12-2	08Ch16N11M3T 10Ch17N13M2T	2350	17348
	duplex	1.4362		S 32304	X2CrNiN23-4		2327	
		1.4410	LH18N10M2		X2CrNiMoN25-7-4		2328	422942
		1.4462		S 31803	X2CrNiMoN22-5-3		2377	
heat-resistant steel	ferrite	1.4724	H13JS		X10CrAlSi13	10Ch13SJ <sub>u</sub>		17125
		1.4742	H18JS		X10CrAlSi18	15Ch18SJ <sub>u</sub>		
		1.4762	H24JS	(446)	X10CrAlSi25			
	austenite	1.4828	H20N12S2	309	X15CrNiSi20-12	20Ch20N14S2		17251
		1.4841	H25N20S2	310 314	X15CrNiSi25-21	20Ch25N20S2		
		1.4843	H23N18		X16CrNi25-20	ChN20J <sub>u</sub> S		
		1.4845		310S	X8CrNiSi25-21	20Ch23N18	2361	17255
		1.4864	H16N36S2	330	X12NiCrSi35-16			17253

## Stainless steel - basic grade characteristics

Notions such as „stainless steel” or „acid resistant steel” are conventional. Each grade has a top corrosion resistance level defined for the specific working conditions which depend on e.g. temperature.

type	characteristics
AISI 304	Very popular general purpose stainless steel. Used in food industry for parts that are not in contact with food.
AISI 316	Acid resistant steel widely used in chemical, pharmaceutical and food industry with improved corrosion resistance (in comparison to AISI 304 steel).
AISI 316L	Acid resistant steel with reduced carbon content for increased intercrystalline corrosion resistance. Used especially for welding connections.

## TECHNICAL INFORMATION

### Conversion table for pressure units

PSI	MPa	kG/cm <sup>2</sup>	bar	atm	PSI	MPa	kG/cm <sup>2</sup>	bar	atm
25	0.17	1.76	1.72	1.70	5200	35.85	365.60	358.80	353.60
50	0.34	3.52	3.45	3.40	5300	36.54	372.63	365.70	360.40
75	0.52	5.27	5.18	5.10	5400	37.23	379.66	372.60	367.20
100	0.69	7.03	6.90	6.80	5500	37.92	386.69	379.50	374.00
200	1.32	14.06	13.80	13.60	5600	38.61	393.72	386.40	380.80
300	2.07	21.09	20.70	20.40	5700	39.30	400.75	393.30	387.60
400	2.76	28.12	27.60	27.20	5800	39.99	407.78	400.20	394.40
500	3.45	35.15	34.50	34.00	5900	40.68	414.81	407.10	401.20
600	4.14	42.18	41.40	40.80	6000	41.37	421.84	414.00	408.00
700	4.83	49.21	48.30	47.60	6100	42.06	428.87	420.90	414.80
800	5.52	56.24	55.20	54.40	6200	42.75	435.90	427.80	421.60
900	6.20	63.28	62.10	61.20	6300	43.44	442.93	434.70	428.40
1000	6.90	70.31	69.00	68.00	6400	44.13	449.96	441.60	435.20
1100	7.58	77.34	75.90	74.80	6500	44.82	457.00	448.50	442.00
1200	8.27	84.37	82.80	81.60	6600	45.51	464.03	455.40	448.80
1300	8.96	91.40	89.70	88.40	6700	46.20	471.06	462.30	455.60
1400	9.65	98.43	96.60	95.20	6800	46.88	478.09	469.20	462.40
1500	10.34	105.46	103.50	102.00	6900	47.57	485.12	476.10	469.20
1600	11.03	112.49	110.40	108.80	7000	48.26	492.15	483.00	476.00
1700	11.72	119.52	117.30	115.60	7100	48.95	499.18	489.90	482.80
1800	12.41	126.55	124.20	122.40	7200	49.64	506.21	496.80	489.60
1900	13.10	133.58	131.10	129.20	7300	50.33	513.24	503.70	496.40
2000	13.79	140.61	138.00	136.00	7400	51.02	520.27	510.60	503.20
2100	14.48	147.64	144.90	142.80	7500	51.71	527.30	517.50	501.00
2200	15.17	154.68	151.80	149.60	7600	52.40	534.33	524.40	516.80
2300	15.86	161.71	158.70	156.40	7700	53.09	541.36	531.30	523.60
2400	16.55	168.74	165.60	163.20	7800	53.78	548.39	538.20	530.40
2500	17.24	175.77	172.50	170.00	7900	54.47	555.42	545.10	537.20
2600	17.93	182.80	179.40	176.80	8000	55.16	562.46	552.00	544.00
2700	18.62	189.83	186.30	183.60	8100	55.85	569.49	558.90	550.80
2800	19.30	196.86	193.20	190.40	8200	56.54	576.52	565.80	557.60
2900	19.99	203.89	200.10	197.20	8300	57.23	583.55	572.70	564.40
3000	20.68	210.92	207.00	204.00	8400	57.92	590.58	579.60	571.20
3100	21.37	217.95	213.90	210.80	8500	58.61	597.61	586.50	578.00
3200	22.06	224.98	220.80	217.60	8600	59.30	604.64	593.40	584.80
3300	22.75	232.01	227.70	224.40	8700	59.98	611.67	600.30	591.60
3400	23.44	239.04	234.60	231.20	8800	60.67	618.70	607.20	598.40
3500	24.13	246.07	241.50	238.00	8900	61.36	625.73	614.10	605.20
3600	24.82	253.10	248.40	244.80	9000	62.05	632.76	621.00	612.00
3700	25.51	260.14	255.30	251.60	9100	62.74	639.79	627.90	618.80
3800	26.20	267.17	262.20	258.40	9200	63.43	646.82	634.80	625.60
3900	26.89	274.20	269.10	265.20	9300	64.12	653.86	641.70	632.40
4000	27.58	281.23	276.00	272.00	9400	64.81	660.89	648.60	639.20
4100	28.27	288.26	282.90	278.80	9500	65.50	667.92	655.50	646.00
4200	28.96	295.29	289.80	285.60	9600	66.19	674.95	662.40	652.80
4300	29.65	302.32	296.70	292.40	9700	66.88	681.98	669.30	659.60
4400	30.34	309.35	303.60	299.20	9800	67.57	689.01	676.20	666.40
4500	31.03	316.38	310.50	306.00	9900	68.26	696.04	683.10	673.20
4600	31.72	323.41	317.40	312.80	10000	68.95	703.07	690.00	680.00
4700	32.41	330.44	324.30	319.60	11000	75.84	773.38	759.00	748.00
4800	33.10	337.47	331.20	326.40	12000	82.74	843.68	828.00	816.00
4900	33.78	344.50	338.10	333.20	13000	89.63	913.99	897.00	884.00
5000	34.47	351.54	345.00	340.00	14000	96.53	984.30	966.00	952.00
5100	35.16	358.57	351.90	346.80	15000	103.42	1054.60	1035.00	1020.00



# TECHNICAL INFORMATION

## Conversion table (inch / mm)

inch				mm
-	1/32	2/64	0.03125	0.79
1/16	2/32	4/64	0.0625	1.59
-	3/32	6/64	0.09375	2.38
1/8	4/32	8/64	0.125	3.18
-	5/32	10/64	0.15625	3.97
3/16	6/32	12/64	0.1875	4.76
-	7/32	14/64	0.21875	5.56
1/4	8/32	16/64	0.250	6.35
-	9/32	18/64	0.28125	7.14
5/16	10/32	20/64	0.3125	7.94
-	11/32	22/64	0.34375	8.73
3/8	12/32	24/64	0.375	9.53
-	13/32	26/64	0.40625	10.32
7/16	14/32	28/64	0.4375	11.11
-	15/32	30/64	0.46875	11.91
1/2	16/32	32/64	0.500	12.70
-	17/32	34/64	0.53125	13.49
9/16	18/32	36/64	0.5625	14.29
-	19/32	38/64	0.59375	15.08
5/8	20/32	40/64	0.625	15.88
-	21/32	42/64	0.65625	16.67
11/16	22/32	44/64	0.6875	17.46
-	23/32	46/64	0.71875	18.26
3/4	24/32	48/64	0.750	19.05
-	25/32	50/64	0.78125	19.84
13/16	26/32	52/64	0.8125	20.64
-	27/32	54/64	0.84375	21.43
7/8	28/32	56/64	0.875	22.23
-	29/32	58/64	0.90625	23.02
15/16	30/32	60/64	0.9375	23.81
-	31/32	62/64	0.96875	24.61
16/16	32/32	64/64	1.000	25.40

## Pressure - temperature relation for saturated steam

working pressure		saturated steam temperature	
[bar]	[PSI]	[°C]	[°F]
1	14.5	120.4	248.9
2	29.0	133.7	272.6
3	43.5	143.7	290.8
4	58.0	152.0	305.6
5	72.5	158.9	318.2
6	87.0	165.0	329.1
7	101.5	170.5	338.9
8	116.0	175.4	347.9
9	130.5	180.0	356.0
10	145.0	184.0	363.3
11	159.5	188.0	370.4
12	174.0	191.7	377.0
13	188.5	195.1	383.1
14	203.0	198.3	389.1
15	217.5	201.4	394.7
16	232.0	204.4	399.9
17	246.5	207.2	404.9
18	261.0	209.9	409.8
19	275.5	212.5	414.5
20	290.0	215.0	419.0
22	319.0	219.6	427.4
24	348.0	224.0	435.3

Working pressure - overpressure shown by a pressure gauge.

## Conversion table (°C / °F)

°C	°F	°C	°F
-90	-130	50	122
-80	-112	60	140
-70	-84	70	158
-60	-76	80	176
-50	-58	90	194
-40	-40	100	212
-30	-22	125	257
-20	-14	150	302
-10	-4	200	392
0	32	250	482
10	50	300	572
20	68	350	662
30	86	400	752
40	104	500	932

## Safety factor (bursting pressure / working pressure)

hose applications	safety factor
Water hoses with maximum working pressure 1 MPa (10 bar).	3:1
Hose for other fluids, water slurries, solid materials and water with working pressure above 1 MPa (10 bar).	4:1
Hoses for compressed air and other gases.	4:1
Hoses for fluids that may change into gases during pressure drop.	5:1
Rubber hoses for steam.	10:1
WATERBLAST hoses.	2.5:1

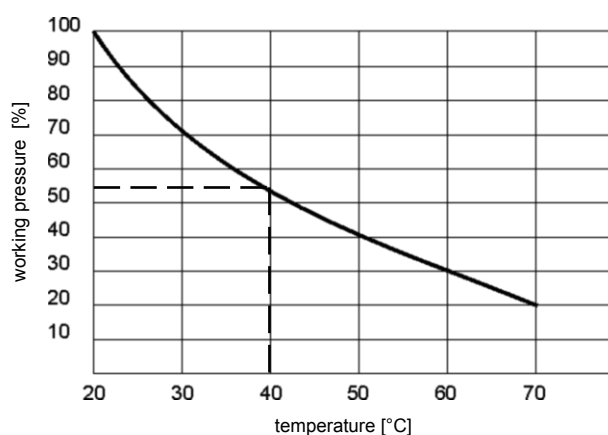
Safety factor values relate to hoses made of rubber and plastic materials according to ISO 7751 standard.

## PVC and PA (nylon) hose characteristics

### Working pressure - temperature relation for PVC hoses

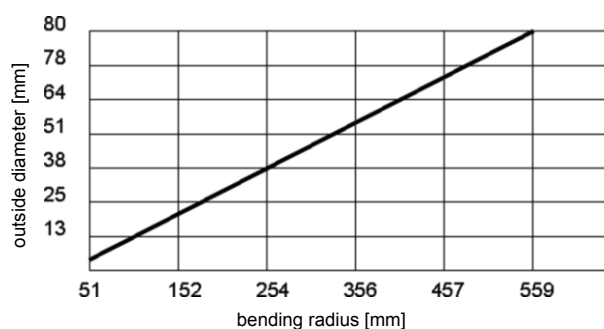
Recommended working temperature ranges from -20°C up to +60°C. A rise in temperature above +20°C causes considerable decrease of bursting pressure and at the same time allowable working pressure.

Example: 11.25 bar (100%), working pressure at +20°C, about 6 bar (55%) at +40°C.



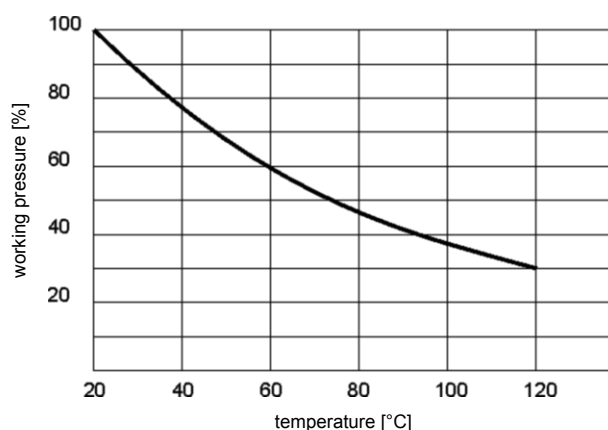
### Bending radius - diameter relation for PVC hoses

Chart on the right shows minimum bending radius-hose diameter relation for PVC hoses (without hose contraction).



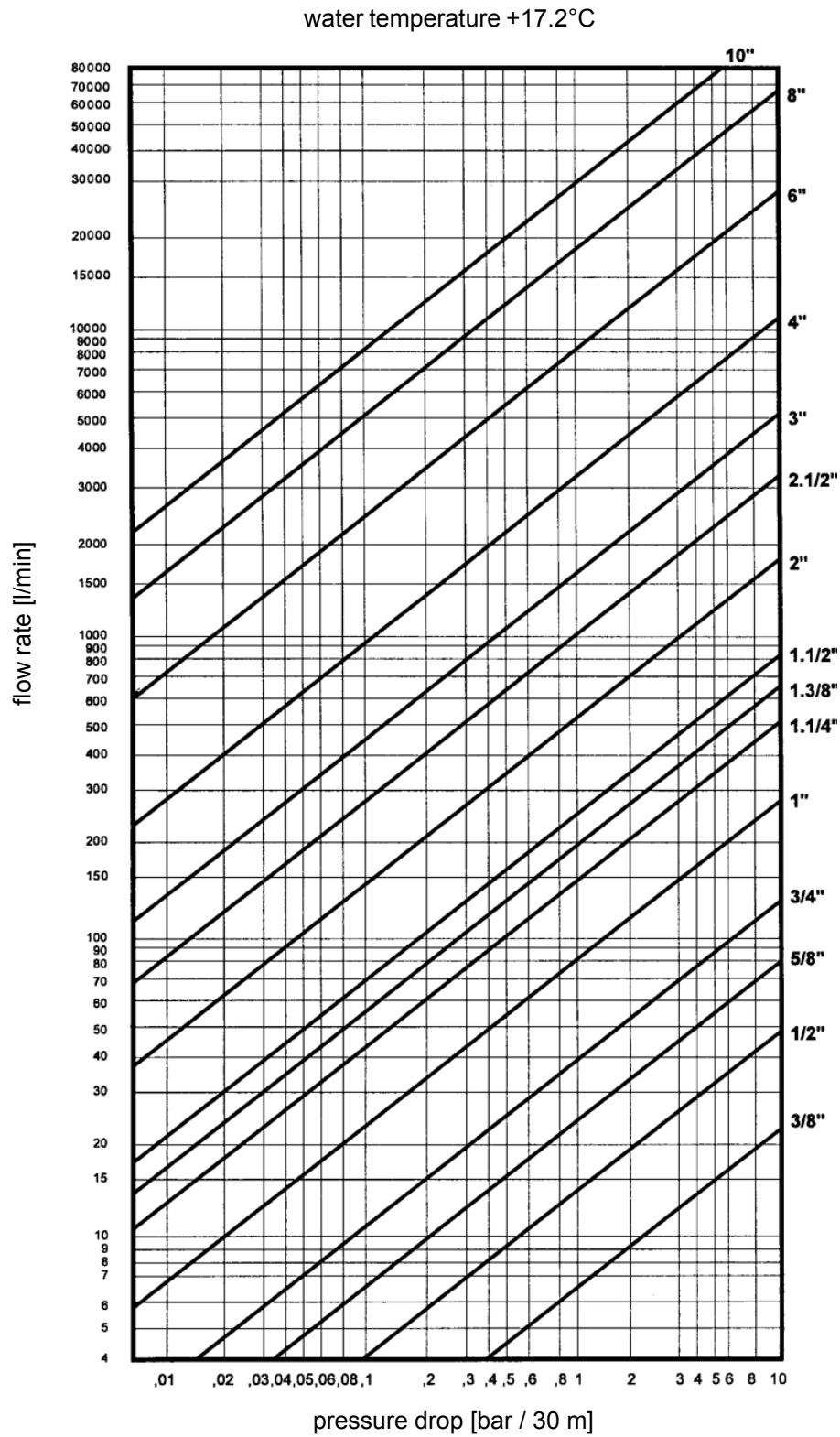
### Working pressure - temperature relation for PA hoses

Chart on the right shows working pressure - temperature relationship for PA hoses.



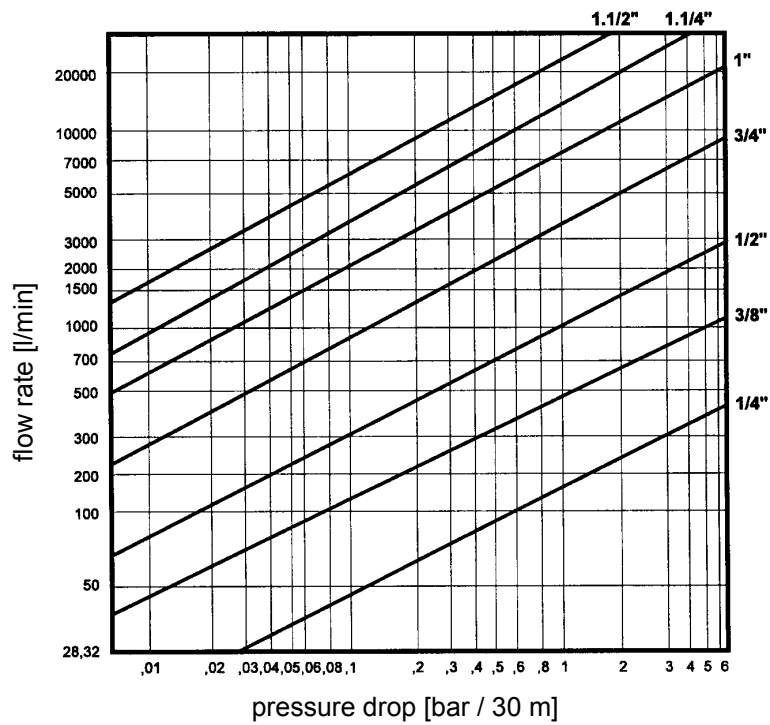
## TECHNICAL INFORMATION

### Pressure drop for water hoses

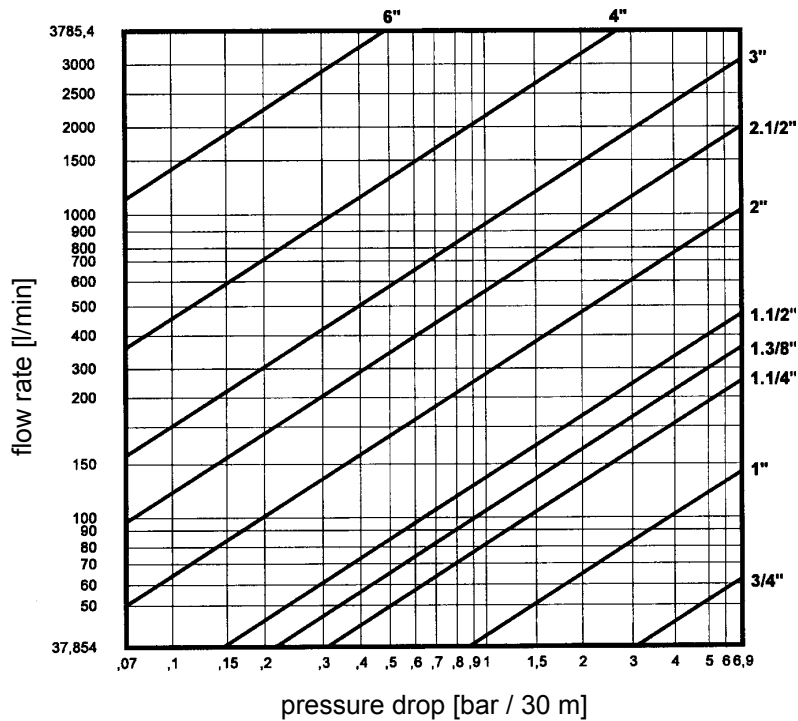


# TECHNICAL INFORMATION

## Pressure drop for air hoses



## Pressure drop for oil hoses



# TECHNICAL INFORMATION

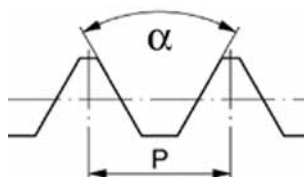
## Thread recognition

### V-thread

P - thread pitch

$\alpha = 60^\circ$  (metric, UNF, NPT)

$\alpha = 55^\circ$  (BSP)



calliper measurement		thread check measurement		thread size			
O.D. [mm]	I.D. [mm]	threads per inch	thread pitch [mm]	imperial pipe BSP BSPT	metric	imperial UNF UN UNS (JIC, ORFS)	imperial pipe NPT NPTF
7.8 ÷ 8.0	6.8 ÷ 7.0		1		M8x1		
9.3 ÷ 9.7	8.5 ÷ 8.9	28	(0.91)	1/8"			
9.3 ÷ 9.7	8.5 ÷ 8.9	27	(0.95)				1/8"
9.7 ÷ 9.9	8.2 ÷ 8.6		1.5		M10x1.5		
9.7 ÷ 9.9	8.7 ÷ 9.1		1		M10x1		
10.9 ÷ 11.1	9.7 ÷ 10.0	20	(1.27)			7/16"-20	
11.6 ÷ 11.9	10.2 ÷ 10.6		1.5		M12x1.5		
12.4 ÷ 12.7	11.3 ÷ 11.6	20	(1.27)			1/2"-20	
12.9 ÷ 13.1	11.4 ÷ 11.9	19	(1.34)	1/4"			
12.9 ÷ 13.1	11.4 ÷ 11.9	18	(1.41)				1/4"
13.6 ÷ 13.9	12.2 ÷ 12.6		1.5		M14x1.5		
14.0 ÷ 14.3	12.7 ÷ 13.0	18	(1.41)			9/16"-18	
15.5 ÷ 15.8	14.4 ÷ 14.7	18	(1.41)			5/8"-18	
15.6 ÷ 15.9	14.2 ÷ 14.6		1.5		M16x1.5		
16.3 ÷ 16.6	14.9 ÷ 15.4	19	(1.34)	3/8"			
16.3 ÷ 16.6	14.9 ÷ 15.4	18	(1.41)				3/8"
17.1 ÷ 17.4	15.8 ÷ 16.1	16	(1.59)			11/16"-16	
17.6 ÷ 17.9	16.2 ÷ 16.6		1.5		M18x1.5		
18.7 ÷ 19.0	17.3 ÷ 17.6	16	(1.59)			3/4"-16	
19.6 ÷ 19.9	18.2 ÷ 18.6		1.5		M20x1.5		
20.3 ÷ 20.6	18.9 ÷ 19.3	16	(1.59)			13/16"-16	
20.5 ÷ 20.9	18.6 ÷ 19.0	14	(1.81)	1/2"			
20.7 ÷ 21.1	18.3 ÷ 18.7	14	(1.81)				1/2"
21.6 ÷ 21.9	20.2 ÷ 20.6		1.5		M22x1.5		
22.0 ÷ 22.2	20.2 ÷ 20.5	14	(1.81)			7/8"-14	
22.6 ÷ 22.9	20.6 ÷ 21.0	14	(1.81)	5/8"			
23.6 ÷ 23.9	22.2 ÷ 22.6		1.5		M24x1.5		
25.1 ÷ 25.4	23.4 ÷ 23.8	14	(1.81)			1"-14	
25.6 ÷ 25.9	24.2 ÷ 24.6		1.5		M26x1.5		
26.1 ÷ 26.4	24.1 ÷ 24.5	14	(1.81)	3/4"			
26.3 ÷ 26.7	23.7 ÷ 24.1	14	(1.81)				3/4"
26.6 ÷ 26.9	24.3 -24.7	12	(2.12)			1.1/16"-12	
26.6 ÷ 26.9	24.6 ÷ 25.0		2		M27x2		
26.6 ÷ 26.9	25.2 ÷ 25.6		1.5		M27x1.5		
27.6 ÷ 27.9	26.2 ÷ 26.6		1.5		M28x1.5		
29.6 ÷ 29.9	27.4 ÷ 27.8		2		M30x2		
29.6 ÷ 29.9	28.2 ÷ 28.6		1.5		M30x1.5		
29.8 ÷ 30.1	27.6 ÷ 27.9	12	(2.12)			1.3/16"-12	
29.8 ÷ 30.2	27.8 ÷ 28.1	14	(1.81)	7/8"			
32.6 ÷ 32.9	30.5 ÷ 30.9		2		M33x2		
32.6 ÷ 32.9	31.2 ÷ 31.6		1.5		M33x1.5		

# TECHNICAL INFORMATION

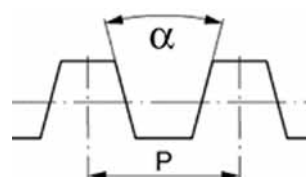
## Thread recognition

calliper measurement		thread check measurement		thread size			
O.D. [mm]	I.D. [mm]	threads per inch	thread pitch [mm]	imperial pipe BSP BSPT	metric	imperial UNF UN UNS (JIC, ORFS)	imperial pipe NPT NPTF
33.0 ÷ 33.2	30.3 ÷ 30.8	11	(2.31)	1"			
33.0 ÷ 33.3	30.8 ÷ 31.2	12	(2.12)			1.5/16"-12	
32.9 ÷ 33.4	30.3 ÷ 30.8	11.5	(2.21)				1"
35.6 ÷ 35.9	33.4 ÷ 33.8		2		M36x2		
36.2 ÷ 36.5	34.3 ÷ 34.7	12	(2.12)			1.7/16"-12	
37.6 ÷ 37.9	34.8 ÷ 35.1	11	(2.31)	1.1/8"			
37.6 ÷ 37.9	36.2 ÷ 36.6		1.5		M38x1.5		
40.9 ÷ 41.2	38.7 ÷ 39.1	12	(2.12)			1.5/8"-12	
41.6 ÷ 41.9	39.4 ÷ 39.8		2		M42x2		
41.5 ÷ 41.9	39.0 ÷ 39.5	11	(2.31)	1.1/4"			
41.4 ÷ 42.0	39.2 ÷ 39.6	11.5	(2.21)				1.1/4"
42.5 ÷ 42.8	40.6 ÷ 41.0	12	(2.12)			1.11/16"-12	
44.6 ÷ 44.9	42.4 ÷ 42.8		2		M45x2		
44.6 ÷ 44.9	43.2 ÷ 43.6		1.5		M45x1.5		
47.3 ÷ 47.6	45.1 ÷ 45.5	12	(2.12)			1.7/8"-12	
47.4 ÷ 47.8	44.8 ÷ 45.3	11	(2.31)	1.1/2"			
47.3 ÷ 47.9	45.1 ÷ 45.5	11.5	(2.21)				1.1/2"
50.5 ÷ 50.8	48.6 ÷ 49.0	12	(2.12)			2"-12	
51.6 ÷ 51.9	49.4 ÷ 49.6		2		M52x2		
51.6 ÷ 51.9	50.2 ÷ 50.6		1.5		M52x1.5		
59.4 ÷ 59.8	56.5 ÷ 56.8	11	(2.31)	2"			
59.9 ÷ 60.2	56.4 ÷ 56.7	11.5	(2.21)				2"
63.3 ÷ 63.6	61.3 ÷ 61.8	12	(2.12)			2.1/2"-12	
64.6 ÷ 64.9	62.6 ÷ 63.0		2		M65x2		
65.4 ÷ 65.7	62.7 ÷ 63.0	11	(2.31)	2.1/4"			
72.7 ÷ 73.0	68.8 ÷ 69.1	8	(3.175)				2.1/2"
74.9 ÷ 75.2	72.2 ÷ 72.5	11	(2.31)	2.1/2"			
87.5 ÷ 87.9	84.9 ÷ 85.3	11	(2.31)	3"			
88.5 ÷ 88.9	84.7 ÷ 85.1	8	(3.175)				3"
112.6 ÷ 113.0	110.1 ÷ 110.5	11	(2.31)	4"			
113.9 ÷ 114.3	110.2 ÷ 110.6	8	(3.175)				4"
129.4 ÷ 129.8	123.2 ÷ 124.0		6		M130x6		
138.0 ÷ 138.4	135.5 ÷ 135.9	11	(2.31)	5"			
139.4 ÷ 139.7	127.5 ÷ 127.9		9.7			5.1/2" (DIN 11)	
139.8 ÷ 141.3		8	(3.175)				5"
163.4 ÷ 163.8	160.9 ÷ 161.4	11	(2.31)	6"			
167.8 ÷ 168.3		8	(3.175)				6"
218.5 ÷ 219.0		8	(3.175)				8"

## Trapezoidal thread

ACME trapezoidal thread with thread angle  $\alpha = 29^\circ$  used for fittings designed for gas (LPG).

O.D. [mm]	I.D. [mm]	threads per inch	thread pitch [mm]	thread
44.4	38.2	6	4.23	ACME 1.3/4"
57	48.7	3	8.5	ACME 2.1/4"
82.5	78.4	2	12.7	ACME 3.1/4"



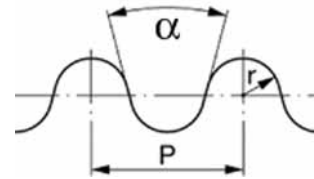
# TECHNICAL INFORMATION

## Thread recognition

### Round thread

Round threads (marked Rd) are used in food industry in DIN 11851 and SMS fittings.

P - thread pitch  
 $\alpha = 30^\circ$



O.D. [mm]	I.D. [mm]	threads per inch	thread pitch [mm]	thread	fitting	DN	
						[mm]	[inch]
28	24.825	8	3.175	Rd 28x1/8"	DIN	10	3/8
34	30.825	8	3.175	Rd 34x1/8"	DIN	15	1/2
40	35.767	6	4.233	Rd 40x1/6"	SMS	25	1
44	39.767	6	4.233	Rd 44x1/6"	DIN	20	3/4
48	43.767	6	4.233	Rd 48x1/6"	SMS	32	1.1/4
52	47.767	6	4.233	Rd 52x1/6"	DIN	25	1
58	53.767	6	4.233	Rd 58x1/6"	DIN	32	1.1/4
60	55.767	6	4.233	Rd 60x1/6"	SMS	38	1.1/2
65	60.767	6	4.233	Rd 65x1/6"	DIN	40	1.1/2
70	65.767	6	4.233	Rd 70x1/6"	SMS	51	2
78	73.767	6	4.233	Rd 78x1/6"	DIN	50	2
85	80.767	6	4.233	Rd 85x1/6"	SMS	63.5	2.1/2
95	90.767	6	4.233	Rd 95x1/6"	DIN	65	2.1/2
98	93.767	6	4.233	Rd 98x1/6"	SMS	76	3
110	103.650	4	6.350	Rd 110x1/4"	DIN	80	3
130	123.650	4	6.350	Rd 130x1/4"	DIN	100	4
132	127.767	6	4.233	Rd 132x1/6"	SMS	101.6	4
160	153.650	4	6.350	Rd 160x1/4"	DIN	125	5
190	183.650	4	6.350	Rd 190x1/4"	DIN	150	6

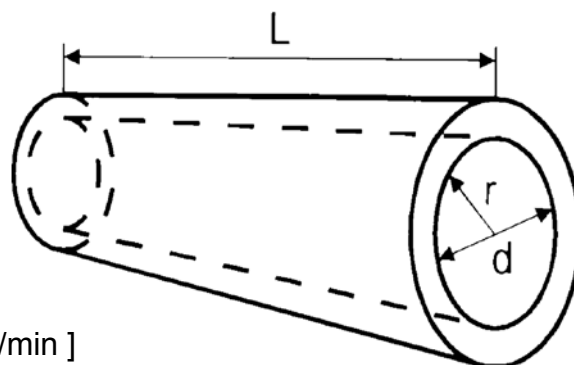
## Fittings - thread and connection type

<b>BSP</b>	British Standard Parallel Pipe Thread	- imperial pipe thread
<b>BSPT</b>	British Standard Taper Pipe Thread	- imperial pipe thread, tapered
<b>JIC</b>	Joint Industry Conference (SAE 74°)	- imperial UNF thread
<b>JIS</b>	Japanese Industrial Standard (e.g. Komatsu)	- imperial BSP or metric thread
<b>M</b>	Metric	
<b>NPSM</b>	American National Pipe Thread - Straight Mechanical	- imperial pipe thread
<b>NPTF</b>	American National Pipe Thread - Taper (Dry Seal)	- imperial pipe thread, tapered
<b>ORFS</b>	O-Ring Front Seal	- imperial UNF thread
<b>G</b>	= BSP	
<b>R</b>	= BSPT	
<b>SAE</b>	Society of Automotive Engineers (90°)	- imperial UNF thread
<b>UNC</b>	Unified Coarse Thread	- imperial
<b>UNF</b>	Unified Fine Thread	- imperial
<b>W</b>	Whitworth Thread	- imperial

# TECHNICAL INFORMATION

## Simple calculations of hose parameters

- L** - hose length [dm],  
**d** - hose inside diameter [dm],  
**V** - hose inside diameter volume [l],  
**Q** - flow rate (amount of liquid flowing through the hose in a certain amount of time) [l/min],  
**w** - flow speed [m/sec].



**Hose volume:**

$$V = \frac{\pi d^2}{4} L = \frac{3.14 \times d \times d \times L}{4} \quad [l]$$

**Flow rate:**

$$Q = 600 \frac{\pi d^2}{4} w = \frac{600 \times 3.14 \times d \times d \times w}{4} \quad [l/min]$$

**Flow speed:**

$$w = \frac{4Q}{600 d^2 \pi} = \frac{4 \times Q}{600 \times d \times d \times 3.14} \quad [m/sec]$$

**Hose diameter required for given flow rate and flow speed:**

$$d = \sqrt{\frac{4Q}{600 w \pi}} = \sqrt{\frac{4 \times Q}{600 \times w \times 3.14}} \quad [dm]$$

**Example:**

flow rate - 30 l/min, flow speed - 4 m/sec

$$d = \sqrt{\frac{4 \times 30}{600 \times 4 \times 3.14}} = \sqrt{0.0159} = 0.126 \text{ dm} = 12.6 \text{ mm}$$

A hose with 1/2" (12.7 mm) diameter is the most suitable for the conditions mentioned in the example.

## Typical flow speeds used in installations

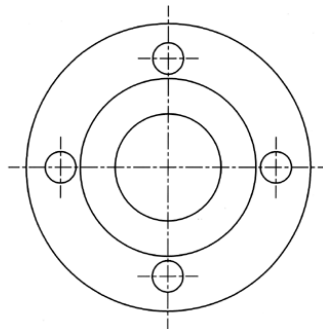
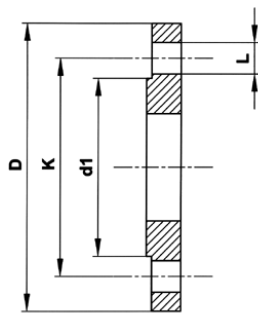
application and medium	type of installation	flow speed [m/sec]
hydraulics -hydraulic oil	suction hoses	0.5 ÷ 1.2
	suction-delivery hoses	2.0 ÷ 4.0
	delivery hoses	3.0 ÷ 7.0
industrial applications - water. chemicals. fuels	suction hoses	0.6 ÷ 1.1
	gravitational flow	1.0 ÷ 2.0
	delivery hoses under pump pressure	1.5 ÷ 4.0
industrial applications - steam	saturated steam pipelines	10.0 ÷ 40.0
industrial pneumatics - air	pneumatic installations	6.0 ÷ 20.0

Matching the hose assembly to the installation must allow for all limitations associated to its structure e.g. for steel corrugated hoses the speed flow should be limited to avoid vibrations causing premature hose damage.



# TECHNICAL INFORMATION

## Flange connection sizes PN and ASA



**D** - outer flange diameter

**K** - bolt circle diameter

**d1** - mating surface diameter

**L** - bolt hole diameter

PN flange sizes in accordance with EN 1092-1. ASA flange sizes in accordance with ASME/ANSI B16.5:1996.




nominal dimensions		PN6						PN10/16					
[mm]	[inch]	D	K	d1	L	no. of bolts	thread	D	K	d1	L	no. of bolts	thread
15	1/2	80	55	40	11	4	M10	95	65	45	14	4	M12
20	3/4	90	65	50	11	4	M10	105	75	58	14	4	M12
25	1	100	75	60	11	4	M10	115	85	68	14	4	M12
32	1.1/4	120	90	70	14	4	M12	140	100	78	18	4	M16
40	1.1/2	130	100	80	14	4	M12	150	110	88	18	4	M16
50	2	140	110	90	14	4	M12	165	125	102	18	4	M16
65	2.1/2	160	130	110	14	4	M12	185	145	122	18	8	M16
80	3	190	150	128	18	4	M16	200	160	138	18	8	M16
100	4	210	170	148	18	4	M16	220	180	158	18	8	M16
125	5	240	200	178	18	8	M16	250	210	188	18	8	M16
150	6	265	225	202	18	8	M16	285	240	212	22	8	M20
200	8	320	280	258	18	8	M16	340	295	268	22	8/12	M20
250	10	375	335	312	18	12	M16	395/405	350/355	320	22/26	12	M20/24

nominal dimensions		PN25						PN40					
[mm]	[inch]	D	K	d1	L	no. of bolts	thread	D	K	d1	L	no. of bolts	thread
15	1/2	95	65	45	14	4	M12	95	65	45	14	4	M12
20	3/4	105	75	58	14	4	M12	105	75	58	14	4	M12
25	1	115	85	68	14	4	M12	115	85	68	14	4	M12
32	1.1/4	140	100	78	18	4	M16	140	100	78	18	4	M16
40	1.1/2	150	110	88	18	4	M16	150	110	88	18	4	M16
50	2	165	125	102	18	4	M16	165	125	102	18	4	M16
65	2.1/2	185	145	122	18	8	M16	185	145	122	18	8	M16
80	3	200	160	138	18	8	M16	200	160	138	18	8	M16
100	4	235	190	162	22	8	M20	235	190	162	22	8	M20
125	5	270	220	188	26	8	M24	270	220	188	26	8	M24
150	6	300	250	218	26	8	M24	300	250	218	26	8	M24
200	8	360	310	278	26	12	M24	375	320	285	30	12	M27
250	10	425	370	335	30	12	M27	450	385	345	33	12	M30

nominal dimensions		ASA 150						ASA 300					
[mm]	[inch]	D	K	d1	L	no. of bolts	thread	D	K	d1	L	no. of bolts	thread
15	1/2	88.9	60.3	34.9	15.9	4	1/2"	95.3	66.7	34.9	15.9	4	1/2"
20	3/4	98.4	69.9	42.9	15.9	4	1/2"	117.5	82.5	42.9	19	4	5/8"
25	1	108.0	79.4	50.8	15.9	4	1/2"	123.8	88.9	50.8	19	4	5/8"
32	1.1/4	117.5	88.9	63.5	15.9	4	1/2"	133.4	98.4	63.5	19	4	5/8"
40	1.1/2	127.0	98.4	73.0	15.9	4	1/2"	155.6	114.3	73.0	22.2	4	3/4"
50	2	152.4	120.7	92.1	19	4	5/8"	165.1	127.0	92.1	19	8	5/8"
65	2.1/2	177.8	139.7	104.8	19	4	5/8"	190.5	149.2	104.8	22.2	8	3/4"
80	3	190.5	152.4	127.0	19	4	5/8"	209.6	168.3	127.0	22.2	8	3/4"
100	4	228.6	190.5	157.2	19	8	5/8"	254.0	200.0	157.2	22.2	8	3/4"
125	5	254.0	215.9	185.7	22.2	8	3/4"	279.4	235.0	185.7	22.2	8	3/4"
150	6	279.4	241.3	215.9	22.2	8	3/4"	317.5	269.9	215.9	22.2	12	3/4"
200	8	342.9	298.5	269.9	22.2	8	3/4"	381.0	330.2	269.9	25.4	12	7/8"
250	10	406.4	362.0	323.9	25.4	12	7/8"	444.5	387.3	323.9	28.6	16	1"

## TECHNICAL INFORMATION




### Standard methods used to assemble fittings on industrial rubber hoses

	<b>CLAMPED FITTINGS</b> Several types of clamps and bands that clamp a hose on a fitting tail.
	<b>FITTINGS WITH SAFETY CLAMPS</b> Bolted clamps that crimp a hose on a tail of the fitting and are secured with a lock (flange) against detaching from a tail of the fitting.
	<b>CRIMPED FITTINGS</b> Ferrules are mechanically crimped from outside and secured with a lock (flange) against detaching from a tail of the fitting.

### Special methods used to assemble fittings on industrial rubber hoses

	<b>INTERNAL CRIMPED FITTINGS</b> Fittings are mechanically crimped from the inside (by pulling a conically-shaped tool through) and secured with a lock (flange) against detaching from a tail of the fitting. This method ensures full, uninterrupted flow of media through the fitting.
	<b>BUILT-IN FITTINGS(VULCANISED)</b> Fittings are vulcanised into a hose during hose production process - integrated with the hose. This method ensures full, uninterrupted flow of media through the fitting.
	<b>BUILT-IN (VULCANISED) RUBBER PROTECTED FLANGES</b> Fittings are vulcanised into a hose during hose production process - integrated with the hose, coated with rubber inside and on a sealing surface. This method ensures full, uninterrupted flow of media through the fitting. No direct contact between media and fitting material. No additional seal needed.
	<b>FLANGES INTEGRATED WITH A RING</b> Fittings are assembled with a special shaped ring vulcanised during hose production process - integrated with the hose, coated with rubber inside and on a sealing surface. This method ensures full, uninterrupted flow of media through the fitting. No direct contact between media and fitting material. No additional seal needed.
	<b>RUBBER FLANGES</b> Flange-shaped, rubber fittings formed and vulcanised during hose production process, reinforced and bolted together with metal back-up rings during installation.




### Special end types of industrial rubber hoses

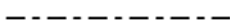


	<b>SOFT HOSE ENDS</b> To facilitate fitting assembly, the wire helix of a suction-delivery hose is ended earlier, before the end of the hose (during hose production). The hose end is finished with textile braid and has appropriate wall thickness.
	<b>ENLARGED SOFT HOSE ENDS</b> To facilitate fitting assembly, the wire helix of a suction-delivery hose is ended earlier, before the end of the hose (during hose production). The hose end is enlarged, finished with textile braid and has appropriate wall thickness.
	<b>CAPPED HOSE ENDS</b> The end of a hose is completely vulcanised during hose production process in order to protect reinforcement (braid) against medium intrusion or moisture.

# TECHNICAL INFORMATION


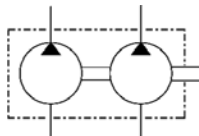
## Hydraulic symbols



### General symbols

graphic symbol	description
	direction and symbol of hydraulic control
	direction and symbol of pneumatic control
	variability of pump, spring, etc.

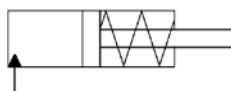

graphic symbol	description
	enclosure outline
	pilot line
	mechanical element (shaft, lever, piston)

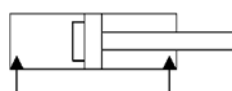
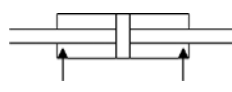
### Symbols of energy transformation elements

graphic symbol	description
	one-way pump with constant flow rate
	two-stream pump

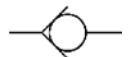


graphic symbol	description
	one-way actuator
	two-way actuator

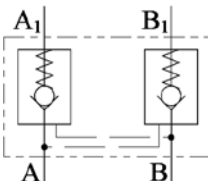
### Hydraulic symbols of actuators (cylinders)

graphic symbol	description
	single acting cylinder with spring
	double acting cylinder

graphic symbol	description
	double-acting single end rod with cushioning on one side
	double-acting double end rod

### Symbols of flow direction control elements \*

graphic symbol	description
	check valve
	check valve with spring
	shut-off valve

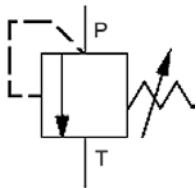
graphic symbol	description
	control check valve, double (load holding valve for double-acting actuator)  - permissible flow directions: A → A1 at the same time B1 → B B → B1 at the same time A1 → A

\* - dividers - see next page

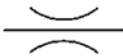
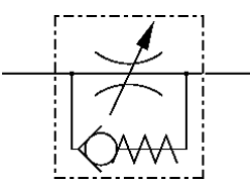
# TECHNICAL INFORMATION


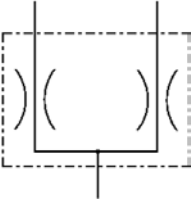
## Hydraulic symbols

### Symbols of pressure control elements












graphic symbol	description
	full flow valve - pressure relief valve, variable (safety or overflow)


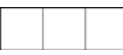



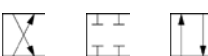
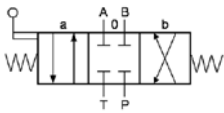
### Symbols of flow rate control valves

graphic symbol	description
	non-adjustable restrictor - flow restrictions depend on medium viscosity
	adjustable check valve with spring

graphic symbol	description
	adjustable restrictor - flow restrictions depend on medium viscosity
	flow divider

### Symbols of dividers

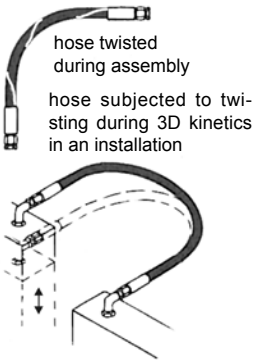
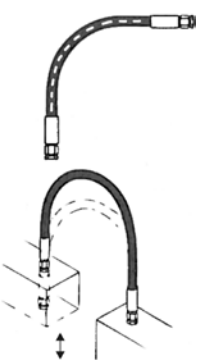
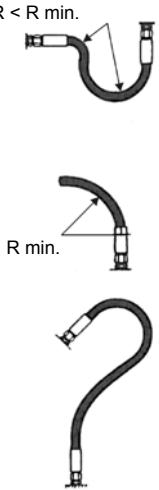
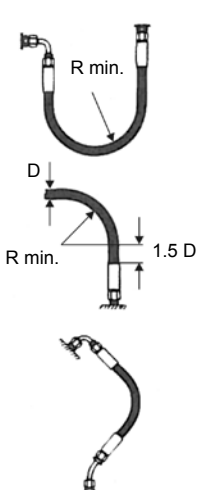
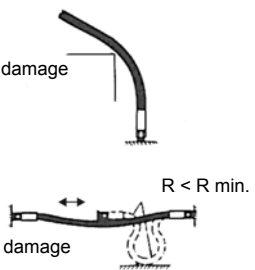
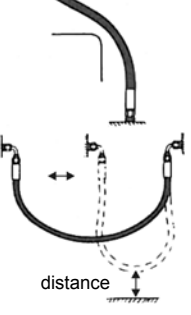
control symbols	
graphic symbol	description
	hand operated
	lever
	spring
	push button
	three-position lock
	electromagnet with single solenoid
	electromagnet with push/pull solenoid
	indirect hydraulic control by pressure increase
	indirect proportional hydraulic control by pressure increase
	indirect pneumatic control
	indirect proportional pneumatic control

control symbols	
graphic symbol	description
	two-way directional valve
	three-way directional valve
	two ways combined - normally open - arrow signifies direction of the medium flow (from higher to lower pressure)
	two ways closed - flow closed
	three-way valve (examples)
	four-way valve (examples)
	example (divider 4/3) - 0 (rest position) - a, b (set position) - P (inlet flow) - T (outlet flow) - A, B (flows) number of flows: 4 number of positions: 3

# TECHNICAL INFORMATION

## Hose assembly

General guidelines in the table below concern all flexible pressure hoses (hose assemblies).

INCORRECT	CORRECT	REMARKS
		<p><b>HOSE TWISTING ROUND ITS AXIS:</b></p> <p>All flexible hoses are particularly prone to damage when they are twisted round its axis. To prevent twisting it is advised to:</p> <ol style="list-style-type: none"> <li>1. While attaching the hose to the connecting part of an installation we should hold down the hose with the spanner to avoid its twisting.</li> <li>2. In moving installations, the kinetics of the hose has to be two dimensional. If three dimensional kinetics occurs, the hose is twisted during operation and prematurely damaged.</li> </ol>
		<p><b>TOO SMALL BENDING RADIUS:</b></p> <p>In the catalogue the minimum bending radius refers to a certain type of hose (measured towards inward bend). If the bending radius in the installation is smaller than the one stated in the catalogue, or hose is kinked, premature hose damage will take place. To prevent premature hose failure, it is advised to:</p> <ol style="list-style-type: none"> <li>1. Provide correct bending radius.</li> <li>2. Provide a straight hose section (approx. length of 1.5 hose outside diameter) in the area close to hose fittings.</li> <li>3. Use proper type of angular fittings and connecting parts (if needed).</li> </ol>
		<p><b>EXTERNAL DAMAGE:</b></p> <p>External damage is the most frequent cause of premature hose failure. To prevent premature hose failure it is advised to:</p> <ol style="list-style-type: none"> <li>1. Provide proper distance between hose and sharp edges or construction elements.</li> <li>2. Protect the hose against abrasion and damage with special protective covers.</li> <li>3. Handle hoses with care and attention.</li> </ol>

### REMEMBER!

**Incorrect installation and external damage are the main causes of hose failure.**